

# airlift

WORLD AIR TRANSPORTATION

MARCH, 1961



Man of the Moment:

**FAA's Boss Halaby**

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For a 14" x 10" lithographic print, suitable for framing, write Aviation Division . . . request Historical Series #5.



November, 1917 . . . McKeever and Powell take on nine enemy planes—shooting down five.

## *Early War Birds*—THE BRISTOL FIGHTER F.2B

This British two-seater is widely acknowledged as the best all-around fighting plane of World War I. In fact, it was so effective in its multi-purpose role—as a deadly fighter, on reconnaissance, bombing and strafing missions—that it remained operational in the RAF until 1931. Generally powered with a 275-horsepower Rolls Royce Falcon III engine, the Bristol F.2B had a maximum speed of 125 mph. It could climb to 5000 feet in 5 minutes and remain aloft for 3 hours. The pilot fired a propeller-synchronized Vickers machine gun mounted under the cowl, while the observer was armed with either a single or twin Lewis gun on a Scarff ring.

Of the many outstanding F.2B pilots, Major Andrew E. McKeever certainly deserves a special mention. As a leading two-seater pilot of World War I, he shot down 30 enemy planes during 8 months of combat while his observers were credited with another 11 victories—a record

made while flying mostly reconnaissance and support missions.

One of McKeever's finest exploits occurred on November 30, 1917. Returning from a solo reconnaissance mission, McKeever and his observer, Sergeant L. F. Powell, encountered a flight of nine enemy planes. With four enemy planes ahead and five behind, the only salvation was to attack. They went after the planes ahead . . . with McKeever scoring two quick victories while Powell knocked down another. Engaging the five remaining Germans, McKeever and Powell each scored again before their guns jammed. McKeever then spun down and hedged home against heavy ground fire.

Their Bristol was riddled and both were slightly wounded . . . yet they landed in one piece. For this courageous action, McKeever was awarded the Distinguished Service Cross and Powell the Distinguished Conduct Medal.



● PHILLIPS AVIATION MILESTONES . . . In 1919 Billy Parker organized the first company flight test program and established Phillips as a pioneer in the development of aviation gasoline. Today, a major supplier of high performance aircraft fuels, Phillips continues its extensive research program to develop new and better aviation fuels and lubricants.

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# HERE'S WHY MORE AND MORE MAJOR AIRLINES ARE SWITCHING TO CHAMPION'S NEW JET IGNITERS!

Champion's new jet igniters are doubling igniter service life in Pratt & Whitney JT3 and JT4 engines!

More and more major airlines—including KLM, American, TWA, Western and Sabena—are switching to Champion's new jet igniters for their Douglas DC-8 and Boeing 707 engines.

With new engine operating procedures calling for more frequent periods of continuous ignition, existing igniters suffered severe electrical erosion. They burned out—rapidly. But Champion's new AA37S and AA42S igniters are *doubling* the service life of igniters previously used.

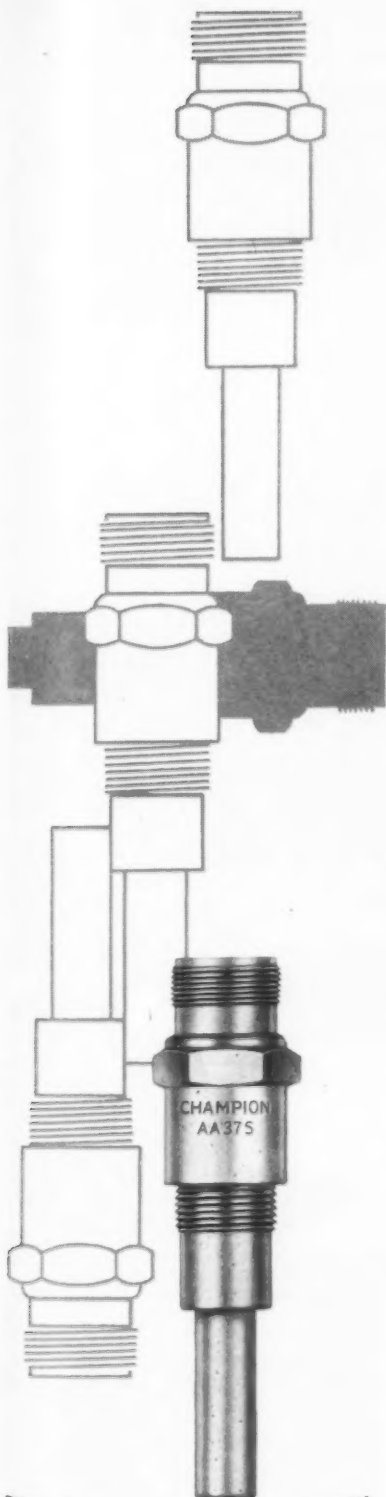
The reasons for this far longer service life are found in the igniters' firing end design.

- A SPECIAL FIRING CAVITY which aids in resistance to deterioration under severe, prolonged ignition.
- A NICKEL-CHROME PROTECTED INSULATOR TIP which guards against extreme combustion temperatures.
- A SEMI-CONDUCTING CERAMIC COATING which reduces voltage requirements, especially under continuous ignition.
- A TUNGSTEN-TIPPED CENTER ELECTRODE which provides high erosion resistance under all operating conditions.

These are the design features which give Champion's new igniters their remarkably high resistance to the electrical inferno that chips ceramics and erodes metals. And that remarkably high resistance means longer life—the reason so many major airlines have adopted these new igniters as standard.

The new Champion AA42S igniter is approved for the JT4 engine and replaces the Champion AA16S. The new Champion AA37S igniter is approved for the JT3 engine and replaces the Champion AA15S. *And the AA37S is the only igniter approved for the JT3D turbo-fan engine!*

These new igniters are examples of Champion's continuing contribution to the needs of today's piston- and jet-engined aircraft. For the most dependable aviation spark plugs and jet igniters available today, insist upon Champions!



## CHAMPION

CHAMPIONS ARE USED IN EVERY  
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**B.F. Goodrich**

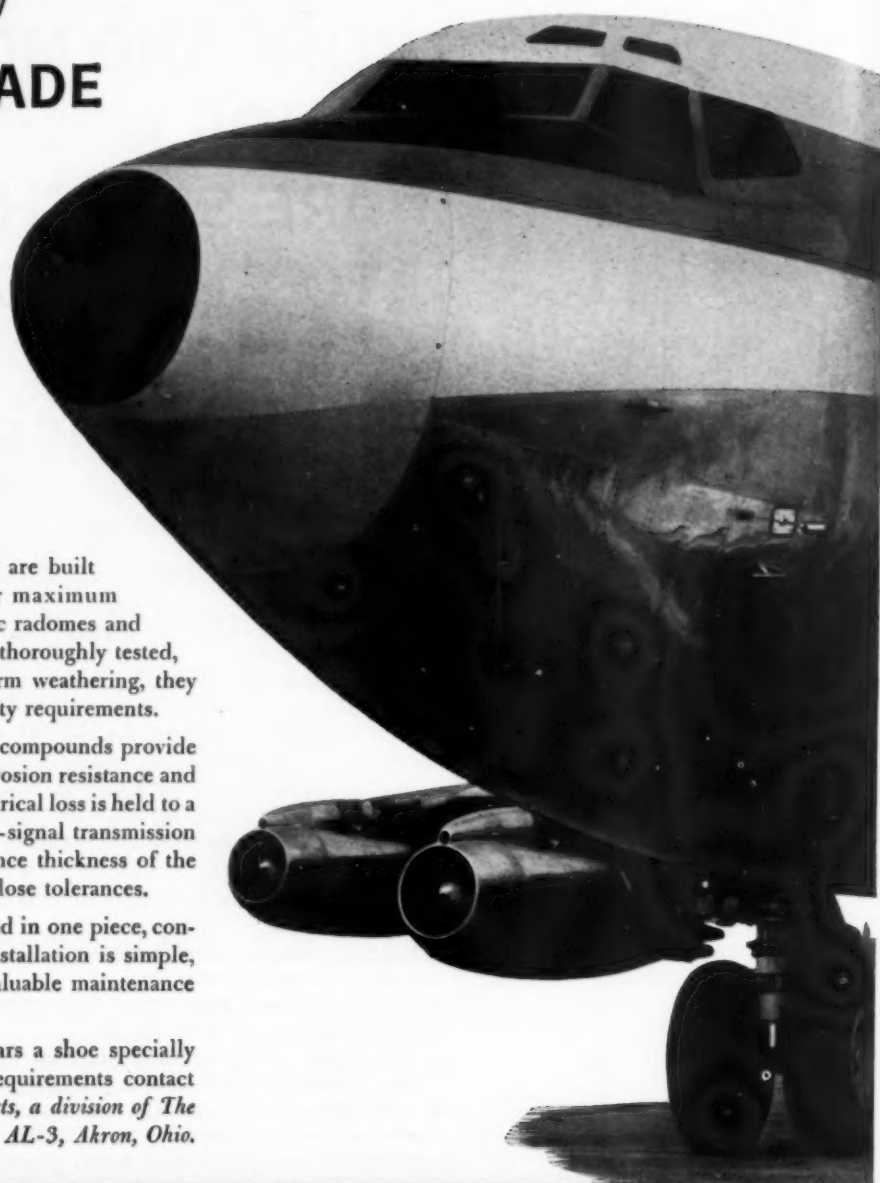
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BFG erosion shoes are supplied in one piece, contoured to fit the part. Thus installation is simple, requires no special tools. Valuable maintenance man-hours are saved.

The well dressed radome wears a shoe specially made for the job. For your requirements contact *B. F. Goodrich Aviation Products, a division of The B. F. Goodrich Company, Dept. AL-3, Akron, Ohio.*



### EROSION SHOES ON BOEING 707 ANTENNA



*UHF antenna*



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MARCH, 1961

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**THIS MONTH'S COVER**—The new head man in the Federal Aviation Agency, Najeeb E. "Jeeb" Halaby, successor to the job made famous by a fiery predecessor, E. R. "Pete" Quesada. For an intimate first impression of Mr. Halaby, his background and philosophies, read Brad Dunbar's report of an exclusive interview with the new Administrator on page 19.

AIRLIFT Photo by Phil Geraci

19,750 copies this issue



# Flight Propulsion



Left to right: Lt. Col. T. H. Miller, USMC; Vice Admiral W. F. Raborn, Jr., USN; J. D.

Wethe, General Electric; Cmdr. J. F. Davis, USN; D. D. Clark, McDonnell Aircraft.

## G. E. trophy goes to F4H pilots

NEW ORLEANS, La.—The General Electric trophy for significant achievement in military aviation in 1960 has been presented to the U.S. Navy and the two pilots who set new world speed records with the Navy's McDonnell F4H Phantom II fighter.

Joint recipients of the award are Lt. Col. T. H. Miller, USMC, who set a new 500-km record of 1216 mph; and Cmdr. J. F. Davis, USN, who set the 1390-mph 100-km run record.

The trophy was presented Jan. 13 at a regional Navy League meeting. In making the award, J. D. Wethe, an executive of G.E.'s Large Jet Engine

Department, cited "the outstanding capability of the Naval air arm and the pilots who fly the Navy's jets."

The F4H in which Lt. Col. Miller and Cmdr. Davis set the closed-course records was powered by twin G-E J79-2 test engines. The Phantom II is now flying with the J79-8, an improved production engine. The more powerful -8 produces over 16,000 lbs of thrust.

Its 12:1 compression ratio helps to make the F4H the Navy's fastest, highest-climbing, longest-ranged fighter. For additional information on the F4H/J79, check GED-4106. See coupon.

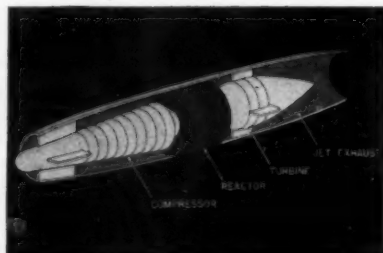
## GENERAL ELECTRIC BEGINS WORK ON FLIGHT-TEST NUCLEAR ENGINE

EVENDALE, O.—A high-performance direct-air cycle turbojet powerplant scheduled for flight testing in the mid-1960's is now under development at General Electric's Aircraft Nuclear Propulsion Department.

ANPD General Manager David F. Shaw announced the program recently, after two modified turbojet engines were successfully started and brought up to normal operating performance on nuclear power alone.

In previous tests, startup was accomplished with chemical fuel. The all-nuclear start established the feasibility of the direct-air-cycle nuclear turbojet, using nuclear fuel for the entire operation.

With the all-nuclear start, General Electric completed a series of Heat Transfer Reactor Experiments (HTRE) conducted during the past five years. The HTRE series demonstrated the practicability of the direct-air cycle system and resulted in the development



Schematic of a nuclear powerplant shows how a nuclear reactor could replace the combustion system of the familiar petroleum-burning jet engine.

of many of the components necessary for nuclear flight.

General Electric is developing an advanced flight-test direct-air-cycle turbojet under contract to the U.S. Air Force and Atomic Energy Commission.

"... It is no longer a question of can we build a nuclear-powered aircraft

## F4H Features Unique Hydraulic Constant Speed Drive System

LYNN, Mass.—A unique G-E hydraulic constant speed drive powered the electrical system for the McDonnell F4H Phantom II during its record speed runs.

Two parallel 20-kva drives transform the variable speed of the twin J79 powerplants to the constant speed required by the aircraft's a-c generators. The drives, which can "lock" together to divide load, maintain system frequency constant within  $\pm$  one-tenth of a percent.

The G-E drive is a compact radial-piston hydrostatic transmission that features free spherical pistons rather than conventional restrained cylindrical pistons, connecting rods, and associated bearings. The simple design concept has demonstrated reliability of .9997 per hour in over half a million operating hours in other aircraft applications.



Small ball piston elements, key transmission components of the hydraulic system.

The General Electric F4H electrical system contains several innovations for U.S. Navy "production" aircraft, including:

- First application of an integrated drive-generator package.
- First application of oil-cooled generators to provide environment-free conditions.
- First "high temperature" drive, operating continuously at 300F.

For more information about constant speed drives, check GEA-6890. See coupon.

propulsion system, but when can we place such a system in an aircraft," Mr. Shaw said. "We have reached the point where we can say that when an airframe is ready, we can have a nuclear direct-air-cycle engine ready to install in it."

For more details on aircraft nuclear propulsion advances, check GEA-7105. See coupon.



## CONVAIR 990 LOGS FIRST FLIGHT

SAN DIEGO, Calif.—The first flight of a second generation jet airliner, Convair's 990 Coronado, was logged here on January 24 as the swift aft-fan transport climbed aloft on a 2-hour, 3-minute maiden flight.

Powered by four 16,100 thrust-class General Electric CJ-805-23 aft-fan engines, the 990 flew at speeds up to 500 mph and altitudes to 25,000 feet.

A medium/long range jet capable of operating from 5000-foot runways, the 990 is designed to carry 96-121 passengers. Cruising at 640 mph, it will be the world's fastest airliner, and is expected to cut transcontinental non-stop flight time by as much as forty-five minutes.

The aircraft is scheduled to enter commercial service in mid-1961. In addition to speed and short-runway advantages, 990/CJ-805-23 operators will benefit from improved specific fuel consumption and quieter engine operation.

For more information on the Convair 990/CJ-805-23 check GED-4284. See coupon.



A single CT58 powers the Sikorsky S-62, with 10 passengers aboard, at 100 mph. S-62 will soon be in service for San Francisco-Oakland Helicopter Airline.

## Second California Airline to Offer Turbocopter Service

SAN FRANCISCO, Calif.—San Francisco-Oakland Helicopter Airline recently announced plans to inaugurate Sikorsky S-62 turbocopter passenger service in the Bay area April 1, 1961.

Both the new airline and the Los Angeles Airways will be offering CT58 turbine-powered passenger service. The S-62 has serviced communities in the Los Angeles area since December. The new turbocopter has demonstrated its speed by flying 10 passengers from the Los Angeles airport to Azusa in 15 minutes—a distance usually requiring a 1-hour-and-40-minute drive.

M. F. Bagan, president of the San Francisco-Oakland line, said, "The excellent power-weight ratio of the CT58 engine and the proven components of

this aircraft make the S-62 the most dependable helicopter ever built." Community spokesmen also commented that "its turbine engine makes it a very quiet aircraft."

Producing 1050 horsepower and weighing only 280 lbs, the economical CT58 weighs only 33% as much as reciprocating engines of the same rating. Fifty-five inches long, it requires only 25% of the space of similarly rated conventional powerplants.

Los Angeles Airways, New York Airways, and Chicago Helicopter Airways will fly turbocopters with twin CT58 powerplants in 1961.

For more S-62/CT58 information, check GED-3987A and GED-4236. See coupon.

## G-E lift fan completes 90 hours' operation

EVENDALE, O.—General Electric recently logged another important step in its lift fan flight test program, completing 90 hours of operation. Fifty hours of wind tunnel testing were included in the operation.

The lift fan will permit tactical military or commercial aircraft to take off or land vertically, yet cruise as

present jets do. A lift fan-powered aircraft flight test is planned for 1963.

During the recent program, the G-E lift fan engine system, powered by the 2450 pound thrust-class J85-7 engine, was mounted in a wind tunnel aircraft mock-up.

General Electric engineers have discovered that the lift of the airplane/lift-fan combination is greater than the lift of either of them measured separately.

This additional "interaction" lift is attributed to the fan pulling air through from above, creating a force on top of the wing to give the vehicle this lift bonus. Interaction lift helps assure flight over varying flight conditions.

G-E lift fan is designed for horizontal mounting in the fuselage or wings of VTOL aircraft. It is shown here in vertical position, during plant inspection.



### FOR MORE INFORMATION

General Electric Company  
Section B206-22  
Schenectady 5, N. Y.

- ☐ GEA-6890 "Constant Speed Drives"
- ☐ GEA-7105 "Advances in Nuclear Aircraft Propulsion"
- ☐ GED-3987A & GED-4236 "CT58"
- ☐ GED-4106 "F4H/J79"
- ☐ GED-4284 "CJ-805 Progress Report"
- ☐ GER-1704 "F4H AC Electrical System"

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The plane you're looking for is a Convair converted to Allison Prop-Jet engines and Aeroproducts Turbo-Propellers.

Its airframe is proved by millions of hours of airline service. Its power plant is backed by almost 3 million hours of military and commercial flight time.

It goes like sixty—almost six times sixty, in fact. With a cruising speed of 350 m.p.h. and a range of up to 2,600 statute miles, it can fly over or around Gloomy Mondays.

Its cabins are up to three times bigger than other jet-age corporate transports you can buy—13" to 23" wider, 7 to 26 feet longer.

And with typical executive interiors, this FAA-certificated plane can carry 4 to 14 *more* passengers—even has a 514-cubic-foot compartment for equipment, luggage or other cargo. No wonder 17 of these ships are already on order.

Want to know why? Arrange for a demonstration? Call Allison Aircraft Engine Operations in Indianapolis. The number? CHapel 4-1511, Extension 6851.

*Airlines: Route studies show Allison Prop-Jet Convair is the best buy in the jet age. Call or write. We'll prove it's the best buy for your line, too.*



# **ALLISON PROP-JET POWER**

ALLISON DIVISION OF GENERAL MOTORS, INDIANAPOLIS, INDIANA







## Bargain Fares With Pistons

**A**S WE HAVE NOTED previously in this space, the domestic airlines seem to be getting farther away from the mass transportation market instead of closer to it.

There are all sorts of reasons why this is so, but the industry can expect more and more "beefs" in the public press about the high cost of air travel and maybe experimentation is needed.

TWA seems to be trying something that bears watching. It instituted as of mid-January a daily Newark-Los Angeles three-stop Constellation service with a 30-day round-trip excursion fare that is so far under jet fares as to merit respect and examination.

How long has it been since a ten to fourteen-hour flight across the country was regarded as a tremendous reduction in travel time? Not very far back, really. The jets have come in to steal the show but good, and yet isn't there a class of traveler which still relishes the idea of spending a few more hours in the air—as against many hours by surface means—at a *substantial* saving in cost?

The TWA low fare of \$192.17, tax included, is available only on a round-trip basis and the transportation must be used within a 30-day period. It isn't far from the old \$80 one-way fare of the non-skeds, or from American's \$88 Royal Coachman, the DC-7 service which was discontinued when the jets arrived. There was a time when you couldn't talk anybody into going piston, low price or not, but we suspect that price is a far more dominant factor today among non-expense account segments of the traveling public now that the jet novelty has worn off.

Take a look at the fare differentials:

Comparative Fares— New York-Los Angeles and Return		
(All Tax Included)		Approx. Round Trip Time in Hours
Bus	\$146.88	160
Rail Coach	184.74*	140
TWA 30-Day Special	192.17*	24-30**
Piston Tourist	240.13	24-30**
Rail Parlor	277.31*	140
Jet Tourist	304.92	12
Rail Roomette	354.62*	140
Rail Bedroom	393.34*	140
Jet First Class	397.19	12

\*Meals not included. \*\*Varies with number of intermediate stops.

Any airline executive faced with the task of filling jet seats is likely to throw up his hands at the idea of instituting bargain rates on piston equipment. But on the other hand, haven't the air-

lines left a transportation void in the rush to the more costly jets? And would a low-fare piston service really detract from jet business, or wouldn't it more likely provide air transportation for a class of the public that can't afford to travel jet and still would like something faster than bus, rail or private car?

A typical complaint was voiced recently by the syndicated Chicago Daily News columnist, Sydney J. Harris, who moaned that "airline travel is still mainly for the expense-account elite. If we are to prevent the automobile from glutting the nation's already overloaded highways it is up to the airlines to fix a rate schedule tempting to the average family."

We can't agree with Harris that airline travel is "mainly" expense account business, for that simply isn't true, and we suspect that low air fares won't lighten the highway load, but somewhere, somehow, the airlines need to find a place for just plain, ordinary low-fare tourist or coach air transportation. Those reciprocating engines weren't so bad when that's all we had.

## Good News Continues

**W**E CONTINUE TO BE favorably impressed with Kennedy Administration appointments.

Certainly no better choice could have been made for the CAB chairmanship than Alan S. Boyd, who has already proved that he is a man of integrity, independent thinking, and positive ideas.

We think Boyd holds promise of setting a new high as chairman. Those who don't always agree with him at least hold him in high respect; no more could be asked of a regulatory agency head.

Robert T. Murphy, 45, who fills a CAB vacancy, is largely unknown to industry, but his background makes him eligible material. As counsel of the Senate Aviation Subcommittee, his experience should come in handy for CAB, which often in the past has had poor relations with Capitol Hill.

An unexpected break for aviation came with the naming of James E. Webb as head of the National Aeronautics and Space Administration. A space-oriented scientist had been expected for this vital position with perhaps a further declining trend of attention by NASA to aeronautical research. Having had a long background in aviation, Webb may well be expected to maintain a better balance between aeronautical and space research without in any way dimming the spotlight for space.

*Wayne W. Parish*

**TSR**

"It is believed that no other single aircraft in the world can match the performance of the TSR 2..."

*The Right Hon. Harold Watkinson, MP, British Minister of Defence, speaking at Waybridge, on Friday, 7th October 1960*

## ...AND BRISTOL SIDDELEY SUPPLY THE POWER

British Aircraft Corporation have recently received an order from the Ministry of Aviation for a number of TSR 2's. One of the most advanced military aircraft ever to be designed, the TSR 2 will be used in tactical strike and reconnaissance roles with a wide range of weapons, including nuclear. It will: (1) reach twice the speed of sound at altitude; (2) be capable of high subsonic speeds at ground level; and (3) have short take-off and landing capabilities from inferior surfaces.

The Minister of Defence said, when announcing the order: "It is believed that no other single aircraft in the world can match the performance of the TSR 2 in all three respects." The TSR 2 will be powered by the Bristol Siddeley Olympus turbojet.

The Bristol Siddeley Olympus has proved itself in service to be one of the most successful turbojets ever built. Its truly astonishing built-in potential has been strikingly demonstrated by the threefold increase in power from the 11,000-lb thrust of the original produc-

tion engine to the 33,000-lb thrust with reheat of the latest version. The Olympus, which has already helped the Avro Vulcan V-bomber to achieve its outstanding performance, embodies all the qualities essential for the efficient propulsion of a supersonic aircraft: high power at high altitude; remarkable handling characteristics; extremely low fuel consumption; great operational flexibility; a long overhaul life; and the highest power for its weight of any high-thrust turbojet.

The Olympus is eminently suitable for Britain's civil supersonic transport.

POWER FOR THIS



The Bristol Siddeley Olympus high-thrust turbojet powers the Avro Vulcan V-bomber, spearhead of the RAF's deterrent force.

...AND THIS



The Bristol Siddeley Industrial Proteus gas turbine engine powers a 3-megawatt turbo-generator which operates unmanned.

...AND THIS



The Bristol Siddeley Marine Proteus powers the "Brave" class Royal Navy 96-ft, 50-knot patrol boats.

**BRISTOL SIDDELEY ENGINES LIMITED**

Bristol Aero-Industries Limited, 200 International Aviation Buildings, Montreal 9. Tel: University 6-5471



## LETTERS

### DC-3 in the Arctic

To the Editor:

I have read with a great deal of interest Mr. Earl McKaughan's report and specifications for a local service DC-3 replacement. In considering my comments it should be understood that ours is a rather unusual and specialized type of transportation.

Most of the points which we serve have no forms of ground transportation other than in the case of the Arctic Ocean and Bering Sea points with short water transportation seasons. In the case of the Arctic Coast such as Pt. Barrow there is only one re-supply a year, hence the requirement of a broad transportation need slows up all the air carriers serving these points.

It should be borne in mind that these communities also involve oil exploration camps, DEW line installations, mining camps, etc., in addition to the smaller villages of a frontier Arctic and sub-Arctic area.

We must not overlook the fact that this region holds a great interest for substantial numbers of tourists who travel during a relatively short period of time during the summer, all of which results in a highly seasonal type of traffic movement with great peaks and depressions.

Can you imagine any one aircraft design which would provide for this highly erratic type of transportation? I feel that such an aircraft is possible and this should help to establish an optimum in what aircraft manufacturers should strive for.

I will deal first with Mr. McKaughan's design and afterwards point out some features we would like to have in our ideal DC-3 replacement. He has done an excellent job of design which I believe were it offered to the local service industry other than Alaska it would go over very well.

I feel there are some weak points in his aircraft, however. I note the picture depicts pure jet equipment. I believe in time the pure jet will be capable of very short take-offs and landings.

He has a rather formidable problem to obtain his short landing and take-off characteristic and still retain his necessary high cruise speed of from 350 to 400 miles per hour which would be required to get his economical cruise of 300 MPH with a reserve of speed available.

### Air Delivery to Europe

As a special service to its international readership, AIRLIFT magazine is now being air-shipped by jet to Frankfurt where German Postal Service personnel redistribute it to key European cities. The new, fast delivery began with the January issue at no additional cost to European subscribers.

His requirement for unitized cargo handling is excellent but I question whether it is very feasible with the overall layout of his aircraft. I do note that the picture indicated a substantial compartment in the belly.

I note that the convertible cargo compartment is shown in the rear section of the aircraft, and the buffet is shown in the extreme tail. This would appear to be somewhat unhandy but quite possibly the buffet might be moved forward.

I am all for the projected range for the 500-mile segment including round trip fuel with some intermediate stops. This is excellent but would actually put the aircraft in the medium range field or, in effect, equip it for a 2000 mile non-stop flight with reserves.

I am all for the 50% breakeven load factor but it looks very remote for some time to come and I am afraid that as aircraft economy improves the rate structure would continue to drop, still prohibiting the 50% breakeven load factor.

All things considered, Mr. McKaughan's proposed aircraft is excellent but I wonder whether he can have all the good features and still retain adequate payload. It is possible the continuing improvements in turbine engines will bring this situation to pass.

We presently operate seven different types of aircraft from the Cessna-180 through the Beavers, Norseman, Beech, DC-3, F-27, to the C-46. It would be highly desirable to consolidate this multi-group of aircraft into that of only two or three types.

It would be impossible to economically operate all of our routes with one type of aircraft. Either we would be running endless trips with a smaller aircraft or, as in the case of an aircraft of adequate size, it would be operated with extremely low load factors which, of course, would not be acceptable to the mail-rate people. It appears that we are stuck with several types to take care of our customers in the hinterland and therefore will deal with the true DC-3 successor type. In our case we are presently operating DC-3's, F-27's, and C-46's in this category, but they still do not provide all of the needs of the area.

In view of the fact that not all of our points have normal DC-3 airports we need an airplane that will have a gross weight of approximately 40,000 lbs. with a useful load of approximately 20,000 lbs. This airplane should be able to land over air carrier routes on a runway of 2500 feet in length.

It should have relatively large, low pressure tires enabling it to use uncompacted gravel or sand runways. It should be able to carry up to 50 passengers or a freight load of 14,000 lbs. It should have a fuel range equivalent to Mr. McKaughan's aircraft or a range of 1200 miles with approximate full cargo load with all fuel reserves for the worst type of weather imaginable.

It should have a clam-shell door in the nose making it possible to drive a standard 6 x 6 army truck into the forward hold or a tractor of about 12,000 lbs. The bulkhead between the passenger cabin which is in the rear and the cargo compartment which is forward should be adjustable to vary the load from all pas-

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between the  
Northeast and Florida.



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AIRLINES**

### COMING

March, 1961

- Mar. 1—IATA, medical committee, New Delhi.
- Mar. 12—ASME, aviation conference, Statler Hilton, Los Angeles.
- Mar. 13—ATA, agency committee, ATA conference room, Wash., D.C.
- Mar. 20—IATA, traffic handling & accountancy working group, New York.
- Mar. 20-23—IRE, international convention, Coliseum & Waldorf Astoria Hotel, New York.

April

- Apr. 4-7—SAE, national aeronautic meeting, Commodore Hotel, New York.
- Apr. 7—Air Freight Forwarders Assn., Waldorf Astoria Hotel, New York.
- Apr. 8-16—International Aviation Exposition and Flying Display, Singapore Airport.
- Apr. 13—IATA, taxation sub-committee, Paris.
- Apr. 13-14—National Aeronautical Services Assn., annual meeting, Hotel Washington, Wash., D.C.
- Apr. 14-16—ATA, stores & material planning committee, Queen Elizabeth Hotel, Montreal.
- Apr. 17—IATA, 14th technical conference, Queen Elizabeth Hotel, Montreal. (Supersonic transport symposium).
- Apr. 18—IATA, legal committee, Paris.
- Apr. 18-20—AEEC, airlines electronic maintenance meeting, Dinkler-Plaza Hotel, Atlanta.
- Apr. 18-20—ICAO, origin and destination statistics panel, 3rd meeting, Paris.
- Apr. 22-25—AAAAE, 34th annual business meeting and conference, Broadmoor Hotel, Colorado Springs, Colo.
- Apr. 24—IATA, ground handling advisory group, Montreal.
- Apr. 24—IATA, data processing sub-committee, Paris.
- Apr. 24-27—Aerospace Medical Assn., 32nd annual meeting, Palmer House, Chicago.
- Apr. 25—ICAO, personnel licensing/medical div. meeting, Montreal.
- Apr. 30-May 4—Instrument Society of America, 7th national aero-space instrumentation symposium, Adolphus Hotel, Dallas.

May

- May 1—IATA, clearing house and revenue accounting sub-committee, London.
- May 3-5—American Helicopter Society, 17th annual national forum, Sheraton-Park Hotel, Wash., D.C.



sengers to all cargo.

This obviously involves having the pilot's cockpit up above the cargo area. The aircraft would be equipped with two rest rooms, integral steps, and many of the features listed by Mr. McKaughan including a baggage carryon claim feature.

It should be a high wing turboprop provided with the best high lift devices to enable normal landing speeds of not over 60 mph, also to provide for an economical cruising speed of not less than 200 mph. I do not believe this combination is available to Mr. McKaughan's jet-in-the-rear design in the foreseeable future.

Our aircraft should have rails the full length of the cabin with all seats mounted on rails for variable spacing, the same rails providing for palletized loading and unloading of cargo. The original design of this aircraft should be such that it could be ordered with or without the forward cargo doors providing for a very fine forward view for the passengers within a strictly-passenger version.

I would like to point out that this cargo-passenger arrangement is not difficult as it has been already designed into aircraft in the past. Everyone will recall the late Jack Frye's aircraft which embodied many of these features and which was on order by Wien Alaska Airlines and also Northern Consolidated. It would have been in service today had Jack been able to finance his project.

I did not go along with his use of piston engines as power plants. I believe had his design incorporated turboprops he would have successfully effected his financing.

The British Argosy fulfills much of our needs in an aircraft. However, it is slightly large considering the present volume of traffic offered in Alaska.

There is presently under development a transport aircraft in France which will provide the performance features pretty much in accord with that just described. I consider these features quite reasonable and manufacturers contemplating a DC-3 replacement should try to keep the field length within 2500 feet.

SIGURD WIEN, PRES.  
Wien Alaska Airlines, Inc.  
Fairbanks, Alaska

### Travel Agent's Lament

To the Editor:

Amongst your readers, there must be thousands of wide awake travel agents who subscribe to *AIRLIFT* through a desire for up to the minute knowledge and trends in world air transportation. I wonder how much of their thinking paralleled mine upon reading your feature survey "Do Small Trunks Have to Merge" (*AIRLIFT*, August).

Ever aware of the constant struggle for the more equitable relationship between the carrier and the travel agent, the series of arguments, advanced by the highly respected heads of the airlines covered by your story, struck me as a wonderful piece of irony, though I am sure it was not so intended.

Let us just examine a few of the arguments so lucidly developed. President Baker of National refers to the recent increase of airlines operating into Tampa, and suggests that a "well-managed airline can operate profitably if it has a proper route structure not overburdened with unnecessary competition." Before the CAB accepted the responsibility for appointment chaos by removal of the "need" clause, I do not think National or any other domestic airline was particularly

concerned with the well being and profitable operation of well-managed travel agencies by restricting unnecessary competition. The primary philosophy of appointment (if not the technical wording) was "how much can you produce for my airline," not "how will your competition affect other agents who may or may not be supporting me."

President Baker and the others complain about red tape, rules and regulations. The Air Traffic Conference—with no excuse of public interest—has imposed just as burdensome a set of rules on the travel agent. Just ask any travel agent who may have wished to merge or sell his agency prior to the new CAB directives.

President Drinkwater of Western suggests route awards should go to successful, well-run airlines, not to strengthen weak airlines. Is this not somewhat analogous to strong travel agencies expanding by opening branches, either ethnic or general. Yet until recently airlines vigorously opposed this policy, preferring weak, new, multiple agencies whom they could more easily control, rather than stronger, more efficient chains or groups.

President Woolman of Delta appreciates the CAB's attitude in the general passenger fare case in a more realistic approach to a just return on investment for the airlines. Without disagreeing with Mr. Woolman, the travel agents wish the airlines would take an equally just approach to the agents' return on investment in respect of a "general commission rate case."

M. HEIFETZ  
Dominion Travel Office  
Toronto, Canada

### Local Subsidy Evaluation

To the Editor:

I would like to commend to the thoughtful attention of all who are connected in any way with the air transportation industry the article written by Mr. Joseph FitzGerald, president of Ozark Air Lines, which was published in the January issue of *AIRLIFT* in connection with local service airline subsidy.

It is, without doubt, the most honest, straightforward and accurate statement of the problem that I have seen.

T. H. DAVIS, Pres.  
Piedmont Airlines  
Winston-Salem, N.C.

### Quesadabus Under Fire

To the Editor:

Is the general really serious in having "settled on the design" of his Quesadabus for Dulles International Airport? (*AIRLIFT*, Sept.).

Where's the tin-pot chimney for the pot-bellied stove? I just know there's a cracker-barrel and a few brass spittoons scattered among the red-plush seats. The piped music will undoubtedly be honky-tonk pianola, and if there's a hostess aboard (and surely 90 people on a few-minute trip must be escorted—or wouldn't they raise hell!) she'll be uniformed in a gypsy getup, complete with tambourine, to go with the caravan.

Those air-foil mudguards! (Surely specially designed—for 100,000 bucks.) And what? No headlights? How about a nice brass one at each end, just like the Old '97?

The piece-de-resistance is the "feeler" out front, on its way "to 'mate' at its other end with the aircraft." Really, general! With a buzzer yet!

Seriously, are twenty of these grotesque

Quasimodos of Quesada to lumber about among the elegant aircraft and modern structures of this Dulles International showpiece?

JOHN J. NELSON  
C/O American Embassy  
APO 271, New York, N. Y.

## BOOKS

**Fate Is the Hunter**, Ernest K. Gann; Simon & Shuster, New York. \$6. The experiences of an airline pilot, written by former American Airlines' pilot E. K. "Ernie" Gann. Excellent reading, particularly for those interested in the early days of air transportation from the era of the DC-2 and DC-3 through the wartime Air Transport Command.

**World Aviation Directory**, Winter 1960-61 edition, including missile space industries, published by American Aviation Publications, 1001 Vt. Ave., N.W., Wash. 5, D.C. Price: \$12. The current World Aviation Directory lists more than 32,000 executives, companies, organizations and products devoted to aviation and missile/space endeavors. The quarterly Directory has grown over the years to more than 1200 pages. Its frequent publication reflects the rapid fluctuation of personnel and products in the booming aero industries. Since the summer, 1960 edition there has been a 66% change in listings. The first Directory, published in the spring of 1940, was a slim 234 pages.

**An Outline of de Havilland History**, C. Martin Sharp; Faber & Faber Ltd., 24 Russell Square, London; \$5.88. Profusely illustrated (168 illustrations and 19 diagrams) volume marks the fiftieth anniversary of Sir Geoffrey's first successful flight. The author has sought to narrate the history of England's embryo aircraft industry without embellishment. The story of the Comet, including the technical outcome of the inquiry is authentically related. The author winds up his narrative with the birth of de Havilland missiles.

**Three Years Off This Earth**, Alexis Klotz; Doubleday & Co., 575 Madison Ave., New York 22; 396 pages; \$4.95. Captain Klotz' reminiscences were first reported seven months ago (*AIRLIFT*, July) after he had financed an autobiography of 34 years of flying. Now Doubleday has reprinted the TWA Captain's story. Filled with anecdotes about the people and places that are an intrinsic part of aviation's development, it makes fascinating reading for persons in or out of the industry.

**Pilot Instruction Manual**, Federal Aviation agency; Hanover House, Garden City, New York; 146 pages; \$3.50. This book is an exact reprint of the official FAA manual which sets forth in basic one-two-three the principles of flight. Divided into three sections—basic flight information; principles of safe flight; flying instruction—the manual exhibits a host of illustrations which graphically portray the abc's of aerodynamic flight.

**Golden Wings**, Martin Caidin; Random House, 457 Madison Ave., New York 22; 232 pages; \$10. This is the prolific Mr. Caidin's second "pictorial history." It covers in graphic profusion the birth, growth and maturity of U.S. naval airpower. There is not a page of solid text in 231 pages of photographs which neglect not a single aircraft in the navy's 51-year history of airplanes and aviators.





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AIRLIFT

# AIR TRANSPORT TRENDS



- International**      **Foreign airlines have lost most of their U.S. government business.** One result of U.S. program to conserve dollars and reduce gold drain has been new travel rules issued by State Dept., USIA and ICA (some other agencies already had similar regulations). With few exceptions, government workers must use American flag carriers. Result: government ticket sales by larger European airlines, averaging almost \$50,000 per month each, have dwindled to almost nothing.
- Military**      **Optimum cargo plane may be a billion dollar buy.** That's the figure being talked of for the SOR-182 program, now renamed Support System SS476L. Speculation is that whoever wins will be manager of a widely deployed program shared by transport builders, a la current missile/space contracting practices.
- Purchasing**      **A big airline show is coming up,** probably in Chicago about April or May, to give suppliers and other U.S. industry a look at airline progress in electronic data processing for purchasing and inventory control. ATA is shaping final plans. Attendance could reach 3000 to 5000.
- Equipment**      **Competition is increasing among commercial jet suppliers.** Boeing invitation for bidders to build integral 727 stairs attracted 15 firms to a conference on design requirements.
- Helicopters**      **Who'll be first with the big turbines?** It's now a toss-up between Vertol 107 and Sikorsky S-61 as to which will launch this new era in helicopter service. Only one certain of laurels is General Electric, whose engines power both models.
- Business**      **Air bus is attracting new customers.** In recent month, about 10% of passengers on Eastern's low-fare flights between Miami and Pittsburgh, Cleveland and St. Louis were first-riders. And, significantly, the service is taking people out of their cars—22% said they usually drive between air bus cities. Leading the list of passengers' occupations: "housewife."
- CAB**      **CAB procedures irritate airlines.** Some cases get "expedited" and some don't. Transpacific case, United-Capital merger, for example, were hustled along. On the other hand, it took an examiner 17 months, from September 1959 to February 1961, to issue his initial decision in the Pacific-Southwest Local Service Case. And some of the carriers involved in this proceeding are plenty burned.
- Competition**      **Long-haul train service is on the way out in Canada.** Qualified observers state flatly that within two years it will be impossible to travel coast-to-coast by rail. This results from Trans-Canada and Canadian Pacific fare cuts, shifting of emphasis to economy service, introduction of excursion fares (*AIRLIFT*, Dec.). Prediction is also made that a very substantial amount of rail express will shift to air.



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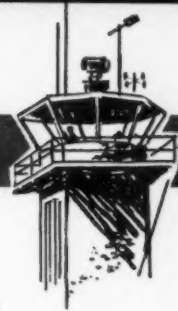
In keeping with its 25-year tradition of leadership, American is proud to be first in bringing you this new dimension in jets—this historic new era in air travel.

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# INDUSTRY AT A GLANCE



## INTERNATIONAL

**Blow-up in Paris.** IATA airlines can't get together on north Atlantic cargo rates. Sharp differences of opinion at the recent Paris cargo meeting prevented any agreement on rates to become effective July 1, when present tariffs expire.

U.S. lines—Seaboard and Western, Pan Am and TWA—insist on a weight-break system that would result in lower rates. A number of European lines disagree on the rate levels and on the abolition of specific commodity rate.

Another try at agreement may be made in the next few weeks. If this fails, result will be an open rate situation. However, any serious cutthroat competition would probably see governments stepping in and refusing to allow operations at what they might consider to be economically disastrous rate levels.

## BUSINESS

**'Big Four' lineup in '60.** American Airlines, with a 6.1% increase in passengers and 11.9% in passenger-miles over 1959, topped the U.S. domestic trunks in both traffic departments in 1960.

AA carried 8.1 million passengers, Eastern (strike-bound in mid-year) hauled 7.65, United 7.58 and TWA 4.97 million. In passenger-miles, American registered 6.29 billion, United 5.39, TWA 4.49 and Eastern, 4.05 billion.

Continental showed the biggest gains with a 31.6% increase in passenger-miles and 20.2% in passengers. Biggest drop was Capital's, down 7.3% in passengers and 7.2% in passenger-miles.

In international operations, United's Hawaii service showed a 43% jump in passengers and 43.1% in passenger-miles. Pan American's Pacific traffic rose 32% in passengers and 22.1% in passenger-miles. On the transatlantic scene, Pan Am rose 18.5% in passengers and 16.3% in passenger-miles while TWA showed increases of 10.4% and 10.0% respectively.

## AIR CARGO

**All-cargo blueprint.** A new master plan for cargo-only operations in the U.S. has been proposed by CAB examiner Merritt Ruhlen.

His recommendations: Only one east-west transcontinental carrier is needed, and it should be The Flying Tiger Line instead of Slick. One north-south line is needed in eastern U.S., and Riddle should get the nod over AAXICO.

The Tigers, Ruhlen says, should get an indefinite certificate Los Angeles-Boston via numerous intermediates, without subsidy eligibility. He selects them

because their financial condition is stronger than Slick's, they have continued common carriage operation and grown while Slick suspended service.

Significantly, he asserts that a north-south line will need subsidy to survive. His proposal: a 10-year certificate for Riddle between Boston and Miami and New Orleans, and between the midwest and Miami, with five-year subsidy eligibility. Probable subsidy in the first year: \$2 million. AAXICO hasn't operated since June 1959; Riddle is a going concern with new equipment plans, says Ruhlen.

Other recommendations: An all-cargo southern transcontinental route isn't needed; truck-air and demand service should be authorized at certain intermediates; American and Delta should receive expanded cargo-only authority; all-cargo flag-stop service should be authorized for all Defense Dept. establishments by the carriers serving the nearest certificated point.

## LABOR

**Engineers aren't different!** The Flight Engineers Assn. International (FEIA), a union born of a government order by the Civil Aeronautics Board in the late '40s, may be headed for labor's history books as the result of another government order.

The National Mediation Board, through a three-man arbitration panel, has ruled that job of flight engineers does not constitute a unique class and craft of airline employee. Although directed at a dispute between FEIA and the Air Line Pilots Assn. at United Air Lines, the NMB decision immediately touched off a six-day, \$5 million-a-day walkout by engineers of six airlines.

Mistaking the NMB decision as a firecracker instead of a keg of dynamite, the Kennedy Administration quickly named another three-man fact finding commission to investigate the FEIA's complaints against the NMB order and report its findings to the White House by May 22.

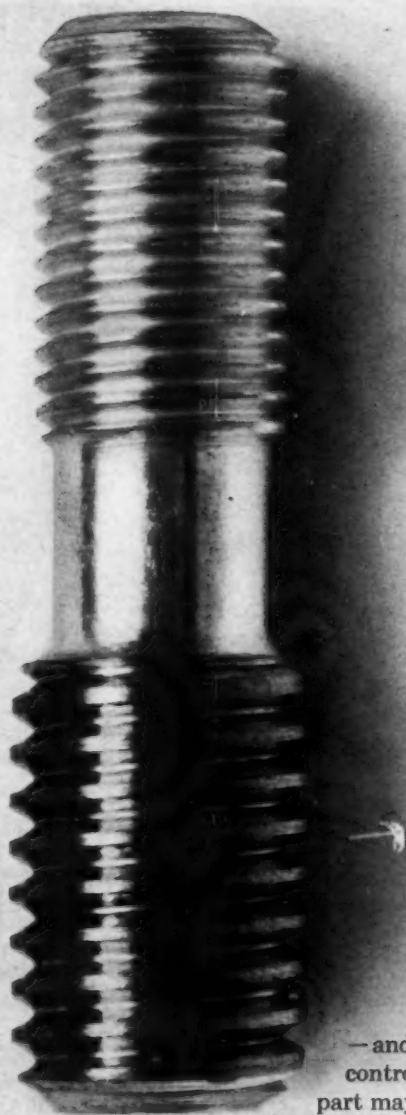
## MANAGEMENT

**Merger all but final.**—The integration of Capital Airlines into the route network of United was set for mid-April as CAB by press release put its stamp of approval on the merger. United, reportedly short of equipment needed to fully modernize Capital's route operations, has taken its "surplus" piston transports off the market.

**New name for Seaboard.**—After 14 years of operation as Seaboard & Western, new management of all-cargo carrier has voted a name change—Seaboard World Airlines, pending stockholder and CAB approval.

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## FAA's New Boss Halaby

**F**AA—and all of U.S. aviation—has a New Frontier change in personality and outlook of leadership hardly less striking than the Inaugural spectacle of a Kennedy succeeding an Eisenhower.

Najeeb E. Halaby, 45, soft-spoken, intellectually inquisitive, deliberate in decision-making, broadly experienced and well-armed with ideas and ideals, is on the job as second administrator in a third, critical year for FAA.

Brig. Gen. Elwood R. (Pete) Quesada, 56, blunt, mercurial, fast-moving, self assured and equally idealistic, is the predecessor against whom Halaby inevitably will be measured.

By no means a renowned figure in U.S. aviation when President Kennedy announced his selection on the eve of Inauguration, Halaby was the focal point of intense speculation on his potential as administrator and his probable impact on the industry. At *AIRLIFT* presstime, a 45-minute interview and his first two weeks of shirt-sleeved work sketched this picture of him (with new colors about to be added by results of his initial recommendations to the White House):

Long-range goals and planning to meet them will be perhaps the most significant characteristics of his administration. They will be manifest both within FAA and across the full spectrum of federal regulation and development of aviation.

### To study modernization timetables

He will get a prompt updating of the Harding/Curtis studies' timetables for modernization of the air traffic system.

He will similarly re-evaluate FAA's objectives after the agency's first two eventful years, and with the New York mid-air collision already having etched its third year with crisis.

Coordination of government aviation agencies with an end to FAA-CAB animosity is an immediate objective.

He is Kennedy's "principle aviation adviser" with direct access to the White House, but not just to set himself up as the aviation power behind the throne. He looks for policy-making by the President stemming from informed, cooperative groundwork by all of "aviation government"—FAA, CAB, DOD, NASA.

And he apparently has none of his predecessor's thoughts of assuming—under whatever "safeguards"—the accident investigating authority of CAB. A natural three-way tie—former test pilots Halaby and CAB Safety Director Oscar Bakke, now FAA flight standards chief—could bind many real and fancied CAB-FAA wounds.

There'll be no FAA-general aviation feuding as far as Halaby is concerned, either. His goal for the future is a system in which each user operates to best practical advantage according to his own peculiar needs, although he concedes that short-range safety programs may impose some restrictions. "But we must never take the fun out of flying," he says.

A fresh approach to FAA is assured. Added to their personal contrasts is the basic fact that although only 12 years apart in age, Quesada and Halaby are products of different aviation eras and considerably dissimilar back-

**No less an idealist  
than his outspoken  
predecessor, the new  
FAA chief's aviation  
experience is broad  
and intensive.**

By BRAD DUNBAR



grounds. Quesada necessarily pioneered with FAA; Halaby in turn must run a first inventory.

Halaby is asking endless questions. He already has drawn fully on the past with a unique brain-picking session with past administrators and aviation planners. He is personally reviewing on a system-wide basis FAA's air traffic control and other R&D projects.

Halaby's views of immediate needs clearly have been affected by the New York mid-air collision, and by the unhappy Electra situation.

One rulemaking stemming directly from the New York accident, mandatory reporting to ATC of navaid or radio malfunctions, already has been issued. Halaby clearly indicates this will be neither the last nor the huskiest FAA move. And he has said he will investigate the Electra and its engine mount retrofit to satisfy himself (and his test-pilot instinct) that it is completely airworthy.

### Dislikes personal comparisons

Halaby himself, though with no lack of admiration for Quesada, does not particularly like personal comparisons of the second and first FAA administrators. And there is much to be said for his desire to be assayed on his own.

At 45 he is a lean man with a heavy shock of gray-



edged black hair and a strongly handsome, lined face. He is at once flier, attorney, businessman, aviation executive, Army Air Corps-Navy veteran, former State and Defense Department official, and aviation consultant.

He was educated at Stanford (BA, 1937), the University of Michigan and Yale University (LLB, 1940). He "took a hundred bucks my family gave me" and learned to fly an OX-5 Travel Air at 17 after catching the bug from the tree-top exploits of the stunt-fliers of the thirties. Later he enrolled in CPT, and bought his own Fairchild 24. He became a flight instructor for the Army Air Corps in 1940, and moved from there into test flying, first with Lockheed and then with the Navy.

Halaby's latter-day pioneer status rests on his organization of the Navy's first test pilot school at NAS Patuxent River, his testing of the nation's first jet, the Bell P-59, and his subsequent achievement of the first continuous transcontinental jet flight.

#### Wide range of experience

His postwar career provided the unusually wide range of experience in both private and government life that he brings to FAA. He was aviation intelligence officer and foreign affairs adviser to the Secretary of Defense and later deputy assistant secretary for international security affairs; he was first chairman of the NATO Military Production and Supply Board; he was special assistant to the administrator of the Economic Cooperation Administration (ECA); he was vice chairman of the White House Aviation Facilities Study (Harding) Group that first recommended FAA.

In later years he has directed his own Los Angeles law firm, served as president of American Technology Corp., as a member of the Rockefeller Brothers Foundation Study Panel, and as VP-finance and administration and director of Servomechanisms, Inc. He went to FAA directly from a key position as secretary-treasurer of Aerospace Corp.

Despite their contrasts, Halaby shares with Quesada an idealistic bent that will serve him well in FAA's turbulent regulatory atmosphere. Yet here again there are noteworthy differences.

Quesada's first words to this writer a few months after FAA was born called attention to "all the pressure groups" that make up aviation. Through an administration which is widely viewed as generally successful—indeed, probably impossible of attainment by anyone but Quesada—his deeply-felt duty to "protect the public interest against these pressure groups" became almost a fixation.

#### A different philosophy

Halaby expresses it, at least, in far different fashion. He quarrels with the quote attributed to him by a wire service when his appointment was announced that the "aviation world is composed of numerous pressure groups," and that his job would be one of "represent(ing) the public vis-a-vis these groups."

Halaby sees various segments of civil-military aviation, many of them represented in his own background, as forces that often conflict, but which all have as a common objective the advancement of the art and the industry. And he finds many system needs which cannot be left to seek their own fulfillment, or worked on in completely willinilly fashion.

He disclaims personal pretension in tackling the job. "I'm no David with a swept-wing sling shot" is his own well-turned phrase. But he'll try to "resolve like component forces," the drives and pressures to help his President build those new aviation frontiers.

His first watchwords seem to be:

Study, plan, and do the job . . . right. ■

Behind the scenes maneuvers on U.S.

international route policy promise

action. From CAB chairman Boyd comes . . .

## Nine Big Questions o



*TOO MANY COOKS* spoil bilateral broth? This example shows divided nature of U.S. delegations sent to negotiate bilaterals in contrast with foreign groups which usually speak with one voice and have a single policy to work by. British group, at right, all are subordinate to Mrs. Alison Munro, undersecretary to the U.K. Minister of Aviation and delegation leader. U.S. delegation (left) includes (L to R) Paul Reiber, representing ATA; Greer Murphy, Mrs. Mary Hillyer and Joseph Watson, all CAB staff; Laurence Vass, chief of State Dept's transport and communications office and delegation head; James Haahr, deputy to Vass; Thomas Carter, U.S. air attache at London; and Theodore Hardeen and Francis Holladay, Dept. of Commerce.

By ROBERT BURKHARDT

Contributing Editor

**U**. S. AIR BILATERAL POLICY, or rather the lack of one, has become an issue of major concern to new president Kennedy. One of his "new frontier" goals is to establish definite foreign policy objectives for the State Department and Civil Aeronautics Board to follow in negotiating and revising bilateral air route agreements.

"Our old bilaterals are out of date," says one of the President's more outspoken aides. "Our international air route policies are bankrupt."

The President is seeking guidance. Some is bound to come from James M. Landis, a powerful influence in his post as White House overseer of regulatory agencies. United Research, Inc. (the Paul Cherington group), used often in the Eisenhower Administration, has offered to study the bilateral problem for the new policy planners.

The CAB, quite sensitive to outside invasion of what it feels is its policy domain, is proposing a study of its own. Chairman Alan Boyd, even before assuming his new post, drew up his own plan of action.



# ons on Bilaterals



Photo by W. E. Alleyne

The U.S. airlines, all that have interest in international route matters, are being drawn into the reappraisal of bilateral policy. A private meeting of carriers has been held by the Air Transport Assn. principally to discuss chairman Boyd's plans.

For background, ATA circulated a 10-page memorandum drawn up by chairman Boyd and new acting CAB executive director Robert Lester. It consisted almost entirely of a series of searching questions about U.S. bilateral policies, or the lack of them.

## Boyd's big questions

- Fair sharing—What share of total traffic (passengers and cargo) should U.S. policy aim at obtaining?
- Bilaterals vs. foreign policy—To what extent should U.S. economic or political objectives, apart from simple aviation objectives, influence CAB policy?
- Good neighbor problems—Can and should air relations with immediately adjacent countries be governed by the same principles as are applied elsewhere in light of the unique economic, social and political relationships with those countries?
- Basic issues—should the U.S. re-examine its acceptance of a philosophy of sovereign limits on air rights or espouse one of "open skies?"
- Capacity—Is ex post facto review of capacity satisfactory in practice? Can it work in any case where a nation's investment in aircraft would be seriously jeopardized by accepting capacity limits? Could the U.S. better implement its objectives by developing capacity policies applicable to under-developed nations?
- Rates and fares—If the IATA rate conference procedure is inadequate, how should it be improved? After a

rate has been set and approved by CAB, should foreign carriers operating competitive services be required to comply with the approved rates?

- Traffic pools—Should pools among weaker foreign carriers be encouraged to enable them to adopt less restrictive aviation policies? Should the U.S. encourage their development to meet the aviation needs of new nations to minimize new competition?

- Technical assistance—Should U.S. assistance be expanded to assure that national carriers do not fall into foreign control, or to encourage economic self-sufficiency that will lead to relaxation of restrictive policies toward U.S. carriers?

- Basic procedure—How are U.S. international air transport policies developed and administered? What should be the role of various federal agencies? How best can industry expertise be utilized?

## The reaction is mixed

To observers in key government posts who have seen the Boyd document (it was circulated by ATA to airlines, but was not available to many government agencies) the questions appear timely and should lead to a clearer understanding of CAB's role in bilateral negotiations. Others feel they do not go far enough, failing to come to grips with larger issues involved in present-day bilateral talks.

For example: cargo. The CAB paper virtually ignores this area of potential growth. Yet, when Seaboard & Western Airlines gets its five Canadair CL-44s, it will have the capacity to airlift every pound of freight and mail now being flown by all airlines across the North Atlantic. Past route agreements dealt essentially with passengers. In the future, it will be cargo. But, there is no cargo route policy.

Recent bilateral talks with the British point up the U.S. policy weakness on cargo. Several significant cargo route concessions were agreed to by the U.K. a year ago at Barbados, but they have never been formally adopted.

Why? A two-way deadlock on several passenger route requests has deadlocked the cargo agreement with some ill-feeling on both sides.

Other bilateral talks have been equally bitter. The Dutch, for example, have been irritated by U.S. refusal of west coast traffic authority. The Dutch ambassador has already seen the new Secretary of State. The French, so upset by vacillating U.S. bilateral policy, went to the extreme of denouncing their air agreement with the U.S. As recently as three weeks ago, a French delegation came to Washington to attempt to clean up some of the loose ends of old arguments, but without success for lack of a U.S. policy.

The same holds true for the failure of British talks. Meetings in Barbados in February and Washington in April were fruitless. Here again, the lack of a clearcut U.S. bilateral air route policy stands out as the biggest obstacle. This is the first task facing U.S. foreign policy planners, one that must be corrected in the White House, the CAB, the State Department or perhaps all three.

## Political desks have the say

Second cause of bilateral bungling has been lack of leadership among participating government agencies. Within the State Department alone, political heads have had the power to overrule those representing aviation interests with reckless disregard for what their decisions might mean on the world air route structure beyond their area.

Aviation representatives in State, aspiring to ultimate foreign service assignments, have had little choice but to attempt to justify off-base political agreements. This certainly is no basis upon which the U.S. should be making important air route decisions and the answers to Chairman Boyd's questions should pose some cures. ■

# How to 'Cost' New Cargoplanes

*The task of buying the most economical cargo transport ultimately focuses on costs. Here a Douglas engineer suggests a new approach to cost analysis.*

By D. L. DOTY Operations Research Engineer, Douglas Aircraft Company, Inc.

**H**ISTORICALLY, the air cargo operator has continually striven for lower direct operating costs in an effort to maximize his profit per dollar invested. The struggle continues today, only more so, in the light of increased costs and resistance to rate increases. Faced with this persistent squeeze on profits, the potential cargoplane buyer naturally specifies a low direct operating cost.

But should direct operating cost be the non-alterable, make or break design factor? If so, the designer must take a new approach to get the most out of his design. No longer can he optimize to the usual customer-specified performance requirements and be satisfied that the resulting direct cost is the best that could be attained. Likewise, the agency specifying the new requirements must realize the potency of direct operating cost on the overall aircraft design.

If DOC is to be the major design requirement, one approach the designer could take would be to first conduct a "feasibility analysis" of the proposed cost requirements. This would show the buyer whether his specified cost and payload requirements are realistic and, if not, to what degree the payload or direct operating cost must be compromised to be compatible with each other.

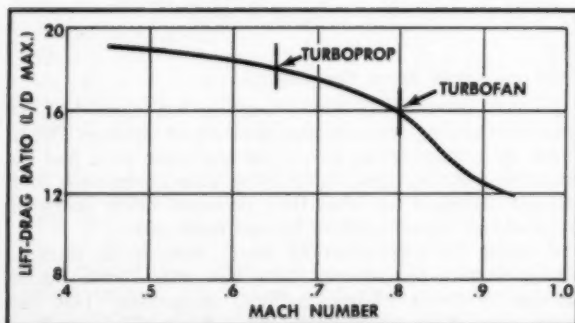
## Other factors affect cost

Payload is not the only requirement that affects the direct operating cost. Field lengths and cruise speed bear heavily on the final design. But, for the purpose at hand, let's assume that the proposed requirements are realistic and the field lengths are the maximum tolerable to the customer.

Here's how the "cost feasibility analysis" approach can be used and how it illustrates the importance of direct operating cost in the overall design.

Suppose, for example, an operator proposes the following

## Lift-Drag Ratio vs. Speed



ANALYSIS does not include new low drag devices which would mean higher L/D ratios than shown here.

design requirements for a new medium-sized cargo transport:

**Payload-range:** 2500 nautical miles with 40,000 lbs. of payload

**Takeoff field length:** 5000 feet

**Landing field length:** Not to exceed takeoff field length

**Speed:** Whichever produces lowest operating cost

**Cargo density:** 10 lbs. per cubic foot

**Special instructions:** a. 5 cents per-ton-mile using 1955 ATA direct operating cost equations

b. Engine selection determined on a basis on a minimum cost

With these requirements in mind, the designer can compute the minimum gross weight necessary to carry the specified payload and enough other points to show the trade-off of payload with gross weight. This computation is rather involved and reflects the designer's experience in such matters as sizing wing areas; choosing wing sweep, aspect ratio, thickness; selecting engines; and knowing the speeds best suited to a chosen engine.

Figures 1 and 2 show the payload-gross weight trade-off for both turboprop and turbofan propulsion systems. A  $\pm 5\%$  spread has been included to typify the current state of the art. This trade-off is shown without regard to state of the art advances, such as low drag devices or boundary layer control systems.

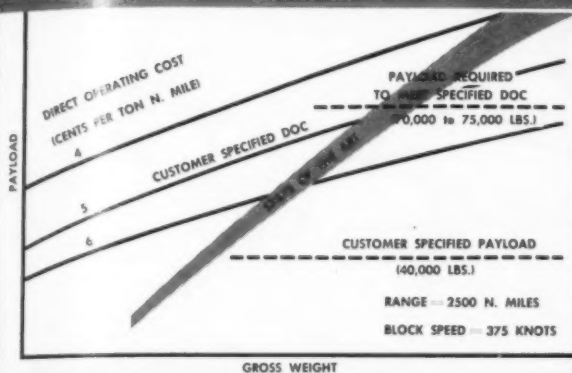
## For BLC, a higher L/D ratio

This could be shown, however, by using some lift-drag ratio (higher than that shown) representative of such a device. The cruise speeds for the two propulsion systems are Mach .65 and Mach .80 for the turboprop and turbofan, respectively. These speeds are typical of each system and should reflect a low direct operating cost level.

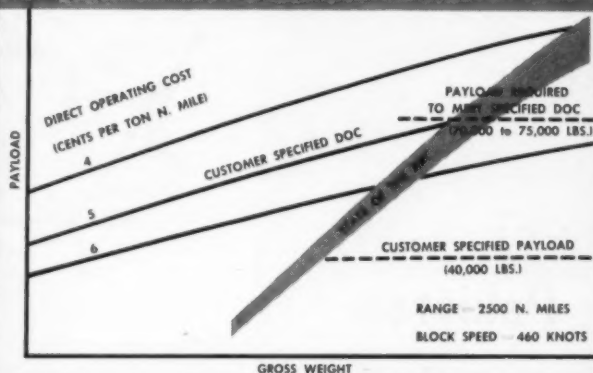
Independent of the state-of-the-art band, the designer can also superimpose on these curves lines showing various values of direct operating cost. These direct operating cost lines are, of course, predicated on a number of assumptions which, for the figures shown are:

- 1955 ATA cost equations. Use of the 1960 ATA formula now available will result in an approximate 12% increase in DOC level.
- 10 year airframe depreciation, 7 years all other
- Airframe cost: \$40 per pound
- Fuel cost: 11.2 cents per gallon
- Engine costs: \$22 per ESHP for turboprop, \$9 per pound thrust for turbofan
- Prop cost: \$47,000 per propeller
- Radio equipment cost: \$60,000
- Engine overhaul period: 750 hours
- MIL-C-5011A flight profiles and reserves

TURBOPROP



TURBOFAN



• Engine specific fuel consumption and fuel to weight ratios commensurate with state of the art

There are two important conclusions that can be drawn from the cost feasibility analyses.

1. An aircraft designed to the customer specified payload-range requirement (2500 n. miles with 40,000 lbs. payload), using the above assumptions, will have a direct operating cost from 7¢ to 8¢ per ton-mile.

2. An aircraft designed to the customer specified direct operating cost (5¢ per ton-mile) will require a payload from 70,000 to 75,000 lbs. at 2500 n. miles.

In actual cases an operator proposing a 40,000 lb. payload requirement would have arrived at this figure only after a careful analysis of his anticipated market, his desired flight frequency and the total capital investment he is

willing to make in acquiring the new equipment. In this case he would hardly be willing to accept an aircraft twice as big as he originally requested.

Likewise, the operator may have equally good reasons for proposing a 5¢ per ton-mile requirement. If this is the case, the operator may have misgivings about compromising either the payload or the direct operating cost and he should give serious attention to the profit-making potential of the entire operation.

Often, in preliminary proposals, the direct operating cost is not dictated on a make-or-break basis, but only as a goal for which to aim. If this situation exists, the cost feasibility analyses will indicate the degree to which it will be necessary to adjust the payload and the direct operating cost to maintain a set of compatible requirements. ■

## Big Case for 'Copters

CAB hearings on Washington service become bellweather of U.S. expansion

THE ECONOMIC RECORD which will be written by CAB in the Washington, D. C., helicopter route case will form the base for U.S. helicopter route decisions for many years to come. It could, in fact, have an important bearing on the whole question of short-haul city-center-to-city-center transportation.

For this reason the case is stirring unusual interest throughout the air transport industry. And the Board, well aware of the significance of its final decision, is taking great pains to assure that the record will be complete.

In a virtually unprecedented move, the Bureau of Air Operations called in helicopter and engine manufacturers for a pre pre-hearing conference and requested that they submit voluminous evidence on costs and operating characteristics of present and future aircraft. The Board also made all certificated carriers serving the Washington-Baltimore area parties to the case and the BAO made extensive evidence requests of them.

### Decision due next year

The status of the case at present is as follows: The pre-hearing conference was held before Examiner Ralph Wiser on January 17. Best guess is that the case will be set for hearing in June with final decision by early '62.

An important question, as yet undecided by the Board, is the degree to which the case might be expanded beyond

its present limits. The original Board order confined it to service between Washington National, Dulles International and Friendship International airports and "a point or points" in downtown Washington. Granting of any of the motions to expand, for instance, to downtown Baltimore, could open up the city center aspect.

Ten applicants are now vying for the route certificate. Three others were dismissed when representatives failed to appear at the pre-hearing conference.

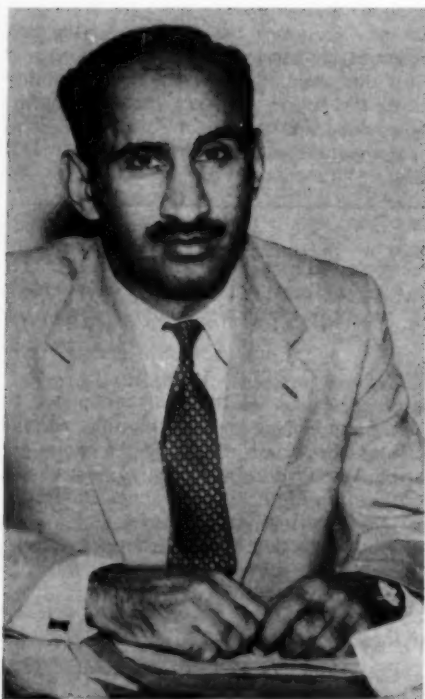
### Who and what they are

The ten are: *The Maryland Co.*, College Park, Md., Theodore Allegri, president—the firm is a manufacturer of electronic flight simulators, according to its application; *Pilgrim Helicopters Inc.* of Washington, Donald D. Webster, president, now operating an air taxi/contract service in Washington; *Chesapeake and Potomac Airways* of Baltimore, J. Cullen Weadock, president, now operating on a charter basis; *D. C. Transit Co.*, O. Roy Chalk, president, operates Washington's public transit services; *New York Airways*; *Washington Helicopter Airways*, Washington, D. C., headed by James Ray Sr., aviation consultant, with A. L. Wheeler, a director of North Central Airlines, as a board member; *Piedmont Airlines*; *Lake Central Airlines*; *Allegheny Airlines*; and *D. C. Helicopter Airways*, a subsidiary of Petroleum Helicopters of New Orleans. ■

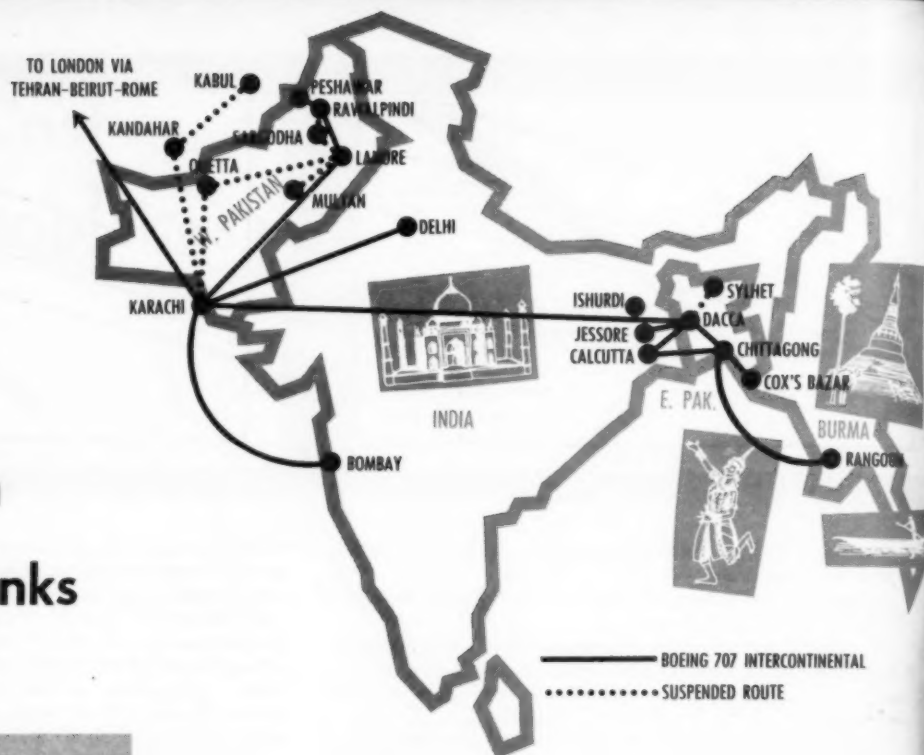


# Pakistan Joins North Atlantic Ranks

By ANTHONY VANDYK



**THIRTY-SEVEN-YEAR** old Air Commander M. Nur Khan is a career Pakistan Air Force officer on loan to PIA as Managing Director. A World War II combat pilot, he has served in top staff positions both in Pakistan and abroad.



**O**N MAY 5, transatlantic air service adds a new name—Pakistan International Airlines. It's only one flight a week, but still quite a feat for a national carrier that has emerged from nowhere almost overnight.

Air transport is a vital commodity for Pakistan. The tiny Middle-East nation is split in two, its segments being located 1200 miles apart. Connecting them by sea takes ten days, a distance of 3000 miles, nearly equal to a North Atlantic crossing.

Due to diplomatic friction with India, which stands between, it has been difficult for Pakistani nationals to cross the borders by land. No through trains connect East and West Pakistan.

The vital role air transport would play in the nation's destiny was seen by early planners who, as early as 1947, sponsored a national airline—Orient Airways—forerunner of Pakistan International Airlines.

Following Pakistan's "quiet revolution" tough, trouble-shooting Air Commodore M. Nur Khan took the reins as managing director. In less than two years PIA has become an efficient—and profitable—operation.

In early '59 PIA was in trouble. While competitors flew jets, PIA operated Constellations, the airplane which opened its route to London in 1955. Domestic load factors sagged, due to public demand for modern aircraft.

After assuming control, Nur Khan soon negotiated a 707 lease with Pan American. With two Convair 240s down, he ordered two Fokker F-27s. With 707s, PIA became the first Asian airline with jets.

PIA today sets the pace in on-time performance, with a record of 88.4% in domestic and regional services. 707 regularity has been even better.

All PIA aircraft are flown by PIA crews, trained by Pan American in New York and holding FAA licenses. Cabin crews were trained partly by PAA and partly by SAS.

The close association between PAA and PIA stems from

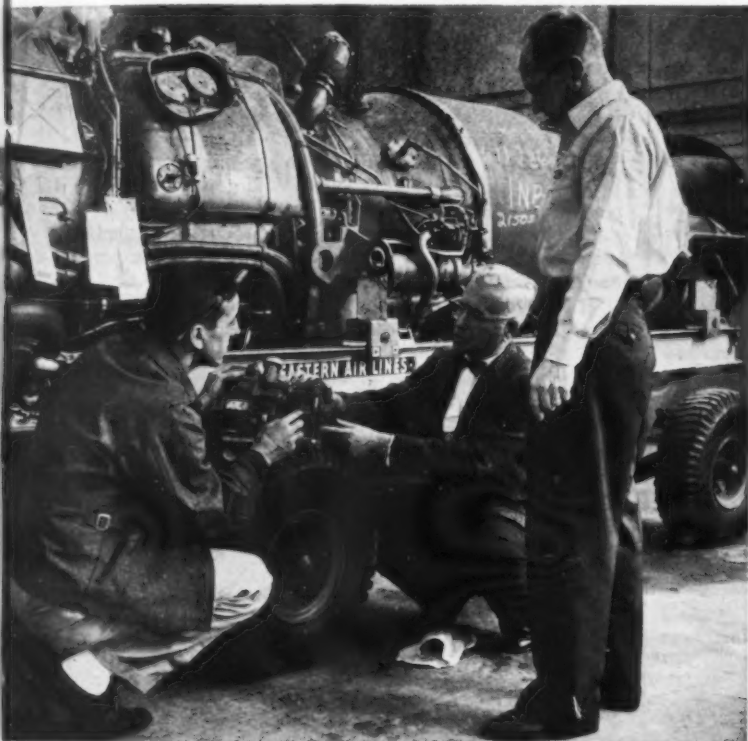
*Continued on page 26*



# CAPABILITY is spelled

s-e-r-v-i-c-e

Aerospace components—even those with the highest order of reliability—must be backed by an organization capable of providing all the requirements of a complete service program.



At Eastern Air Lines Miami base Howard Crothers of Vickers checks installation of DC 8-B pump at service test unit with L. Nuchols, foreman, and J. Schoettle, lead mechanic.

Proposed modification of units for improved service and reduced maintenance is discussed with EAL engineers Manly and Young.

Fast service to customers on overhauled units is insured by large stocks of rotating group assemblies.



Proper overhaul and parts inspection instructions are observed by A. Weigand, general foreman of accessory overhaul for Eastern Air Lines.

**VICKERS** offers the skills, experience and/or material for *all seven* essential service areas: 1. field service; 2. product improvement; 3. technical publications; 4. spare parts; 5. repair and overhaul; 6. training for customers and Vickers personnel; and 7. product support tools and test equipment.

Availability of skills and services in depth is the heart of the Vickers program. For example—technical representatives not only provide the unmatched skills and experience needed to assist military and civilian maintenance personnel but also gather performance and statistical information for improvement in existing products or for new designs.

Highly skilled, broadly experienced technical representatives like Howard Crothers, a 19-year Vickers service veteran, are available wherever needed throughout the free world. Equally important, they can draw on the talents of a large, experienced organization when specialized skills are needed. More details on the many facets of Vickers service are available in Bulletins 6000-A and A-5229. Write, wire or call today for your copies.



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the U.S. government's ICA program for Pakistan under which PAA provides training assistance. The 707 deal, however, is a separate business arrangement.

No capital investment has been needed to set up overhaul and maintenance facilities. Even at Karachi, PIA's home base, PAA provides maintenance. The 707 has boosted loads considerably and has helped PIA's reputation as a jet carrier.

The airline is studying all types of jets and is open to equipment propositions. Nur Khan believes that if he buys a subsonic jet it will have to be for delivery by 1963, since anything delivered later would be too close to the supersonic era. He expects supersonic transports by 1968.

#### **Routes determine equipment**

A major factor in PIA's equipment planning is the decision on new routes. PIA definitely wants to go to New York. This would require an aircraft with trans-Atlantic capability. If the New York route is postponed the airline will be in the market for a jet suitable for sectors of up to 2000 miles and economic for sectors as low as 700 miles.

Such an aircraft could take care of projected route to Tokyo and Sydney and replace Super Constellations on the route connecting East and West Pakistan.

The East-West Pakistan link represents an important source of revenue. Because it is an essential link between the two portions of the country, the government subsidizes the operation. A tourist passenger pays 200 rupees and the government gives PIA an additional 187 rupees as subsidy (1 rupee is worth \$4.76).

On other domestic routes there is no such arrangement. Because of the low-fare structure PIA has difficulty making money although the replacement of Convair 240s with Viscount 800 equipment has helped to cut losses. The introduction of five F-27s in January should counteract losses on the DC-3 routes.

Instead of retiring the DC-3s PIA plans to use them to open up air bus services to points not now served. Nur Khan believes that one of the airline's prime missions is to make the country air minded even though this may mean losing money at first. He regards it as a long term investment which is bound to pay off.

#### **DC-3 freighters vital**

PIA has a continuing use for its DC-3 freighters as long as the Kashmir dispute is unsettled. Supply missions are flown for the Pakistan government over the mountains into Pakistani-administered territory which cannot always be reached by road. The only good roads open most of the year come from India!

Flying DC-3s into these remote fields means climbing to 15,000 feet and descending through narrow valleys into fields which weather often closes. About 6000 tons of supplies are carried annually to Gilgit and Akardu in Kashmir by PIA DC-3s. The 2000 missions flown each year provide useful crew training.

All aircraft except the 707 are overhauled at the airline's FAA-approved base at Karachi. PIA is presently looking for airlines to make use of its facilities and is offering competitive prices for DC-3, Super Constellation, Viscount and F-27 work. PIA offers to overhaul Darts in about 850 man hours at a cost of about \$1.50 per man hour.

Nur Khan takes a direct interest in the day-to-day performance of PIA. As a direct representative of the government he knows how to break down red tape. If there are problems he goes straight to the president who, two years ago, gave him a clear mandate: "Get PIA on its feet—and fast."

His drive for efficiency has paid off. Until 1959 PIA was in the red but this year is likely to report a profit of some \$1.5 million. ■

## **Mohawk Shifts Its Sales Philosophy**

### **New sales concepts, revised staff alignment spearhead an energetic merchandising plan**

**I**T DOESN'T MAKE SENSE to use door-to-door salesmen to peddle a \$16 product. Volume merchandising is better.

It does make sense to service this product—satisfied customers buy again. And it's a good idea to employ experts to find new markets.

This is Mohawk Airlines' new thinking. Out the window have gone all the old ideas, to be replaced by a radical concept of merchandising (average ticket, \$16). The program gets into full swing this month.

Its three parts: (1) Volume merchandising techniques, (2) a new service concept to assure repeat business once the customer is attracted by the volume merchandising, (3) a new approach to creating new revenues.

Mohawk no longer has district sales managers or station managers. Instead, there are area general managers, customer service managers and, in some instances, service-sales managers.

Along with the new setup goes a new attitude. No longer will Mohawk listen to comments that the service of local airlines isn't as good as that of trunks. On the contrary, says Mohawk, it does a better job than the trunks in the types of markets it serves, because it is a short-haul commuter specialist. And this is the new slogan, to be plugged in ads and promotional material: "The Specialist Airline."

The program got underway eight months ago, when Mohawk retained a management consultant, Walter Sternberg, well-known industry sales executive who has held top jobs with American, Eastern and National, and who is currently a director of South Pacific. Sternberg worked closely with president Robert Peach, vice president R. V. Stephenson, who heads the sales-service division, and other officials.

#### **Customers receive questionnaires**

One of the first steps was to find out what the customers were thinking. A seven-day in-flight survey was conducted which produced 5500 usable questionnaires. Of this group, some 2500 flew Mohawk at least once a month; the answers of these frequent riders received the most attention.

Asked to evaluate six items about service, these frequent riders selected by a wide majority "on-time arrivals" as the most important, with "frequency of flights" second. Choosing between four possible new service features, they voted for no-reservations flights, followed by in-flight ticketing. Only a few favored meals and sale of drinks.

About 87% were traveling on business; 28% had not planned their trips more than 24 hours in advance. Asked to select three items that would be most apt to keep them aware of Mohawk, these riders checked, in order, advertising, publicity releases, and recommendations of others. And 75% said commuter-type airlines should simplify passenger procedures, even though they might be substantially

different from those in use by the trunk airlines.

With more than 40% of its customers traveling frequently, and 87% of these for business purposes, Mohawk reasoned that these people already know its product. Given good service, they'll continue to ride; they don't have to be "sold" constantly. Publicity and advertising will remind them of changes in service patterns.

First step in implementing the volume merchandising concept was to place publicity, public relations and advertising under one man, Robert T. Sidney, who conceived the "specialist" idea. Ads and publicity will push this theme: Mohawk is different from and better than a trunk for commuter and connecting service—the best in short-haul air transportation. The "specialist" slogan will be accompanied by a new look—the airline's red-white-blue color scheme is changing to gold-black-white.

With publicity creating interest, and advertising converting the interest into a buying urge, the customer is induced to use Mohawk's service, the airline reasons, and here service-sales, the second concept, takes over.

### Service means sales

Repeat business is to be sold by good service. For example, the passenger survey showed that on-time arrivals received top priority, so Mohawk went to work immediately on this item. Convair power settings were advanced slightly to increase speed (this has not increased mechanical delays). Ramp procedures were improved, and operations officials worked closely with air traffic controllers. By November, 80% of flights were within 15 minutes of scheduled arrival.

The service division formulates all policies and procedures

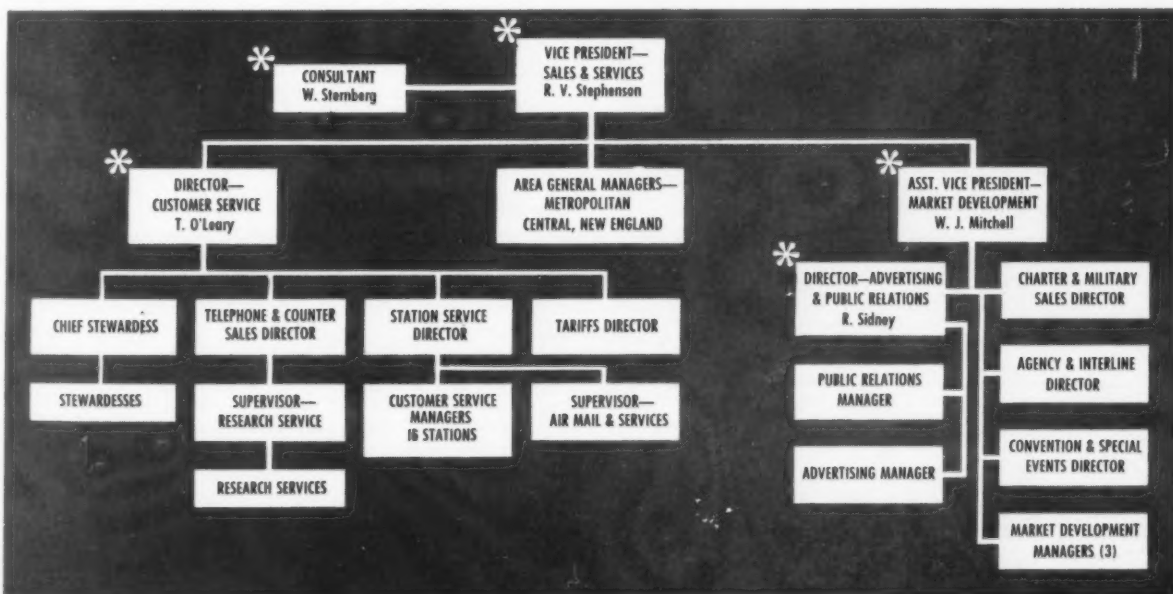
for in-flight services, city ticket offices, airport counters, operations and ramp functions. Area general managers, each of whom has two to five cities, assume responsibilities formerly assigned to district sales managers—except for development of new sources of revenue.

These managers, who report directly to Stephenson, represent all departments of the company in their areas. They administer service standards through customer service managers (formerly station managers) and, in larger cities, service-sales managers (formerly reservations managers, with expanded responsibilities).

In a typical community, the customer service manager, who is responsible for the quality of the product, services volume accounts (travel agents, commercial accounts, other airlines). Thus, if he receives gripes he has full authority to correct the situation immediately. Mohawk believes this is a big improvement over the former system—district sales managers received the complaints, but could only pass them along to another department which provided the service.

The third concept covers development of new business. A group of market development specialists is headed by William J. Mitchell, who resigned recently as Bonanza's v.p.-sales to become Mohawk's asst. v.p.-market development. These specialists have no administrative responsibility, no paperwork. Their sole function is to create new revenue.

Under Mitchell are three men working out of the general offices and three located in the field. The general office specialists are assigned to interline and agency, charter and military, and conventions and special events. Once they make a sale, the service organization takes over the planning and follow-through.



STEPHENSON



STERNBERG



O'LEARY



MITCHELL

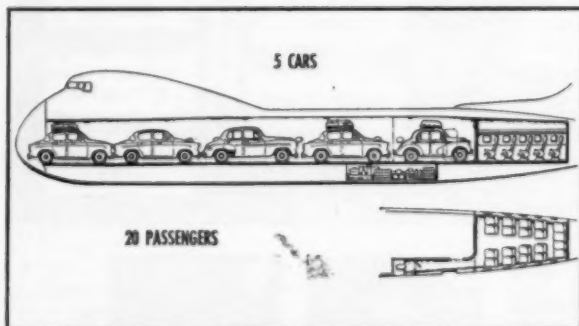


SIDNEY



# British Firm Adapts DC-4 To Channel Ferry

**Nose-loading design by Aviation Traders will carry five autos and 25 passengers. Similar plans are offered for DC-6s and DC-7s.**



**MODEL OF ATL-98 Carvair, Aviation Traders' nose-loading DC-4 freighter, is shown above. Diagram, below, indicates manner in which five cars and 25 passengers can be fitted into converted interior. Flight deck is raised nearly seven ft.**

**T**HE DOUGLAS DC-4 is being given a completely new look by one of Britain's lesser-known aircraft companies, Aviation Traders, Ltd. At its base at Southend Airport, 30 miles east of London, Aviation Traders is converting a DC-4 into a nose-loading freighter.

This conversion is being carried out in close cooperation with FAA and Douglas Aircraft Co. It will open up a new market for the veteran four-engine transport, Aviation Traders' officials believe. For operators requiring a pressurized, faster aircraft, the British company also proposes conversions of the DC-6 and DC-7.

The first converted DC-4 is almost complete and is scheduled to fly in April. Designated the ATL-98 Carvair, it probably will require 60 hours' flying before it is certificated by the British Air Registration Board, Aviation Traders officials estimate.

The first conversion is due to be delivered to Channel Air Bridge, associated with Aviation Traders and part of British United Airways, for use on automobile ferry services between the U.K. and continental Europe. Channel Air Bridge has ordered 10 Carvairs. Aviation Traders has an additional order for three.

The Carvair will revolutionize automobile ferry services because of its greater range and economy than the Bristol 170, present standard equipment for these operations. Carrying five automobiles and 25 passengers, the Carvair will open new routes from England deep into continental Europe, serving such points as Lyon, Strasbourg, Dusseldorf and Bremen. The Carvair's operating economy should permit a twelve-foot automobile to be carried over a distance of 500 miles for under 35 dollars, according to F. A. Laker, head of Channel Air Bridge and Aviation Traders.

The Carvair is basically a DC-4 with a new nose section incorporating an elevated cockpit and clamshell nose-loading doors. Below the cockpit there is an uninterrupted floor length of 81 ft. 2 in. to the rear bulkhead which has been repositioned 47 in. further aft than in the standard DC-4.

## Capacity increased

A total capacity of over 4500 cubic ft. is available. Some 18,000 lbs. payload can be carried up to 1500 miles.

The completely new nose section makes the flight deck 6 ft. 10 in. higher than in the normal DC-4. Access to the flight deck is by means of a ladder on the starboard side of the fuselage. If the Carvair is to be used for long-range services a navigator's position and chart table may be added aft of the second pilot's seat. There is room for a small galley, a twin "sleeperette" rest seat and a crew toilet toward the rear of the flight deck.

Apart from the new nose section and a slightly modified tail, the Carvair varies very little from the standard DC-4. The power plant is unaltered.

Where possible, the existing installation will be retained. The distribution will include a battery busbar. Increased circuit protection will be provided. As in the standard DC-4, aircraft flight controls, engine and ancillary controls are all cable operated.

The main 3000 PSI hydraulic system has not been altered. An additional self-contained system supplied by a hand pump operates the door-opening mechanism. Door locking is manual. Except for minor modifications to restrict the degree of retraction of the nose gear, no alterations have been made.

Although the conversion runs close to \$300,000, Aviation Traders feels that the present price of used DC-4s plus improved operating economy of the Carvair will make it attractive to operators all over the world. As a long-range freighter the direct operating cost of the Carvair is estimated at just over one cent per mile.





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**The call came from the United Nations.** Within hours, huge airlifters were rushed to the Congo with hundreds of U.N. peace troops and tons of supplies. The Congo is a clear case in point why the free world must have hundreds of airlifters ready and able to go anywhere, any time — to a little war, a remote hunger spot, or for support of full-scale strategic retaliation. In Africa, and in more than three years of Air Force service, one big bird has proved ablest: the C-130 Hercules airlifter, made by LOCKHEED GEORGIA. The versatile C-130 is now operating, or being built, in 12 different configurations for the U.S. Air Force, Navy, Marine Corps, and Coast Guard—and for the air forces of several other free nations.



**Urgent!  
Send big birds  
and helping hands**



**LOCKHEED GEORGIA**

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ice,  
130  
and



## Skyboard: For Fast Flight Info

Airport terminal information system proposed by Burtek offers new concepts to solve an old airline headache

By JOSEPH S. MURPHY

**A** FRESH NEW APPROACH to that age-old airport problem of how to give passengers fast, accurate flight information has been proposed by Burtek, Inc. of Tulsa, Okla.

Appropriately dubbed "Skyboard," the Burtek system is one of about four being considered by airlines and airport officials for a \$1 million installation at Chicago's O'Hare International Airport. The company also is talking to United Air Lines about a system for its new Los Angeles terminal.

Skyboard is all new. It features a new style number display with special insurance against bulb burnout. New control console techniques include built-in closed-circuit TV for ease of monitoring. Even a modular design is provided for Skyboard components to speed up troubleshooting and repair.

Skyboard has two major items of equipment. The arrival/departure board, a two-sided affair designed to be readable at 150 ft., measures 30 ft. long, 7 ft. high and 28 in. deep. Controlling the information displayed on the board is a console (see sketch) with built-in closed circuit TV and a high degree of flexibility for the airline operator posting or removing flight data.

### O'Hare alone requires eight

At O'Hare, for example, Burtek suggests eight flight boards to handle all lobby and ticketing areas. Each of the 13 airlines using the airport would have its own control console presumably located in the operations area. Roughly the first half of each carrier's ticketing area board would be repeated on the mast lobby Skyboard and the carrier would have exclusive control over the data displayed.

There's nothing new about the type of information Skyboard would handle. The five usual column headings would

show the flight number, gate number, arrival time, departure time and that catch-all "remarks." The board would handle all flights departing within two hours.

What is different is the Burtek method of display. The key to this is a digital module which uses specially-shaped segments (resembling somewhat a willow leaf) to form all numbers. The figure "8" uses all segments.

### Readable despite burnout

For backlighting, dual bulbs protect against burnout and the confusing prospect of having a darkened segment alter the accuracy of the flight data. As an extra precaution, Burtek has one lamp operating at half power and the other at full power, an arrangement it expects will virtually eliminate chances of dual bulb failure.

Another new concept for board control is the use of magnetically-latched relays which prevent loss of posted information in event of power failure. It takes a pulse to light a segment and the magnetic relays keep it "live" whether power is on or off.

Skyboard is essentially a data transfer system using a four-bit binary code. Each number, character or remark is represented by a combination of voltage or absence of voltage on four wires. The magnetically-latched relay serves as the "memory" device for data posted on the board and it remains latched until a reverse polarity pulse signals it to remove the data.

For the "remarks" column on the board, each airline would have its choice of 20 canned messages such as "on time," "now boarding," or "see agent." If a flight is delayed and the chronology of the operating sequence changes, the control console can handle it. A given flight can be held in place on the board while others "jump" it if the occasion demands.



INSTEAD OF DOTS, Skyboard employs a modular system in which figures are styled for improved readability. Note that

figure "8" includes all segments and others are derived by blacking out selected segments.



For the TV monitor, Burtek proposes use of a Vicon V800 or the equivalent in a high quality, high resolution system. At O'Hare, 18 cameras and 15 14-inch TV monitors are suggested by Burtek to do the job.

The company proposes to either sell or lease the equipment to airports and to supply continuing service if the customer desires it. At O'Hare, a subcommittee of airlines who eventually would pay for the system on a pro rated basis will recommend the type to be adopted and the terms of payment.

#### No newcomer to airlines

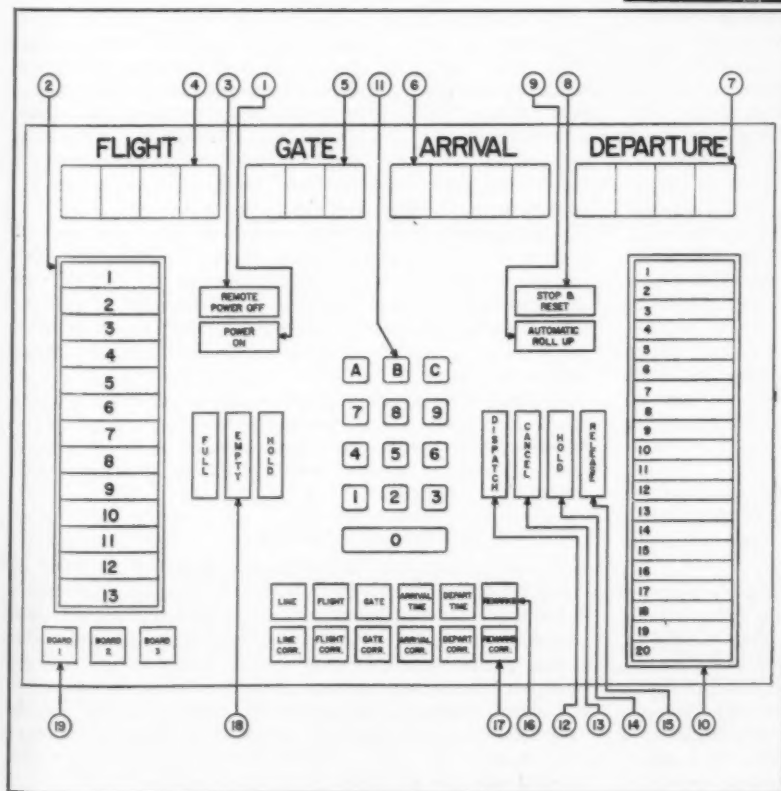
Although Skyboard represents the Tula firm's first entry into the airport display equipment field, it is not Burtek's first crack at doing business with airlines. Vice President John Koch, formerly with American, founded a Burtek predecessor, Technical Training Aids, Inc., in the early postwar years and has supplied airlines with a wide variety of visual training aids and cockpit procedural trainers over the past dozen years.

The impetus for expansion into this new area stems from Burtek's president Earl D. Hilburn, a former v.p. of Link, who joined the company a year ago. Hilburn sees this market as virtually untapped (only two airports have flight boards) and says the rash of mammoth new terminals being planned is bound to increase the demand.

Hilburn is quite optimistic over the response received from airlines on Skyboard to date. Within a matter of weeks, he expects to have a "real live" prototype console to further convince them that this is the answer to their ever-increasing passenger relations problem of inadequate flight information. ■



WHAT THE AIRLINE OPERATOR would work with to pose and erase information. Circled numbers are: (1) on-off button; (2) line selector indicator; (3) remote board power failure indicator; (4) flight column readout; (5) gate column readout; (6) arrival time readout; (7) departure time readout; (8) & (9) auto-roll buttons; (10) remarks selector indicator; (11) input keyboard; (12) line dispatch button; (13) line cancel button; (14) line hold button; (15) line release button; (16) console memory control buttons; (17) memory correction buttons; (18) line condition indicators and, (19) board selection buttons.



# What's Wrong With Local Subsidy?

**AIRLIFT's series on the future of local airline subsidy brings this trunk-eye view and a "history lesson" in federal aid**

**By GEORGE E. GARDNER**  
Aviation Consultant\*

**I**T WAS WITH considerable interest that I read "Is Local Subsidy Here to Stay?" in the September issue of *AIRLIFT*. In fact, I cannot contain the impulse to express my surprise at the local service carriers' lack of appreciation for history. They overlook these facts:

1. They were originally feeder airlines, any definition of which precludes their eligibility for the big-terminal-to-big-terminal, nonstop privilege.

2. The fare which they are allowed to charge is unrelated to the cost of production. This makes subsidy inevitable. The excuse of "public service" is not justification for discrimination in favor of the few travelers who enjoy their service for less than it is worth at the expense of the general tax-paying public.

3. They generally accept the CAB's practice of subsidy payment. Yet, after determining an amount of profit as fair return on a carrier's investment, the CAB almost consistently takes away that profit by not approving certain expenses. It arrives at these disallowances by using an arbitrary yardstick of comparative cost-comparisons in which the similarities are less than those between apples and oranges.

This practice of disallowing expenses is the basic reason no local carrier has been able to compensate its original investors or attract new ones. As originally conceived, subsidies were supposed to assure a profit, and thus incentive. But this intent is apparently not understood, for if it were, subsidies would be greater or some services would long ago have been curtailed.

The point is really that the true cost of local service has not been recognized and that the subsidy bill, high as it is, has been fictitious. As a consequence, the starving local carriers want Government loans, revised route patterns, including trunk type non-stop, and all sorts of panaceas that miss the heart of the question.

That the CAB has held down subsidy payments in this way while continuing to forecast a picture of profitability that fails to recognize existing costs or their inevitable increase is frightening.

4. The fact is that no airplane is available for the feeder-type service in medium-density markets more suitable economically or from a safety standpoint than the DC-3. (Of course, smaller, more economical airplanes than the DC-3 are available for less dense segments, and larger equipment is available for heavily travelled routes.) New-airplane construction costs make unrealistic any hope of a cheaper 20-30 passenger airplane until there is a major breakthrough in aircraft design or operating practices. Lower seat-mile costs have only been achieved by larger



*\*GEORGE E. GARDNER, a former airline president and board chairman (Northeast) turned consultant, held executive posts with three other trunks before heading NEA. He joined Eastern in 1934, Northwest in 1937 and was with National from 1946 to 1947 before starting his 13-year stay at Northeast.*

or faster aircraft, longer-range operations, or greater utilization.

None of these factors would help the average feeder operator, if he is going to fulfill the requirements of the job he is supposed to do. A feeder operator's ambition to get big—even if all that he wants to do is to become a trunk line—is no substitute for better, more frequent service and is not a solution to the subsidy problem.

It should not be necessary, but perhaps a review of the conditions, needs, and philosophies which justified the federal government's fostering the development of civil aviation through subsidy might be helpful. If a review of this kind on an official basis could re-establish the proper position of the local service carriers in the air transport system and re-emphasize the old concept of their responsibility to the CAB and the congress, the original purpose of the act of 1938 could be attained and subsidy reduced to a palatable amount.

The local service carriers, congress, and the CAB must do their part if the rising subsidy bill is to be brought under control, to say nothing of being eliminated. Some change must be effected to protect local service carriers from the wrath

of the taxpayers, preserve their service for those who are willing to pay a fair price for it.

Commercial aviation was subsidized after the end of World War II for three reasons. First, the Post Office Department believed that it could improve its service with the airplane. Having long reflected differences in delivery speeds in its postage rates, it planned—and eventually succeeded—on passing on to the user the rightful cost of air service.

Second, the military, in a world supposedly safe for democracy and full of brotherly love, was shackled by disarmament treaties and thus frustrated in its attempt to keep abreast of aircraft development or provide trained aviation personnel.

## **Military purpose was served**

Lacking authority and adequate appropriations of its own, it supported the development of commercial airlines as a means of providing an aircraft market, which would encourage engineering and manufacturing capabilities. Devious as the approach may sound, it served the military purpose. Subsequent events certainly proved its merit.

Third, entrepreneurs saw in the airplane a new vehicle for transporting people and goods at a profit. Many tried to establish an airline business on a fare structure which would pay for the cost of services rendered.

But the expense of operating inefficient airplanes was

great, and although passengers evinced a real interest in the services, fares were discouragingly high. Growth on this basis would simply have been too slow to meet the desires of the Post Office or the military. Remember the efforts of Thompson, Kohler, Cord, and Ludington?

At this point, the federal government put on a great demonstration: "It would do for the people something that they could not do so well for themselves." And so it was that a system of airlines was established on a free-enterprise basis, and a subsidy was provided that would ensure economic stability while traffic was being promoted at rates competitive with those of other means of transportation.

#### Public service not a reason

The subsidy was to last only until the arrival of "better" airplanes, which would spell self-sufficiency for the airlines. These developments served the needs of the Post Office and military perfectly. There is no evidence to my knowledge that *public service* was the reason at that time for providing transportation at less than cost.

The new air-transport rate was 5.5¢ per passenger mile. This figure was based almost exactly on the then existing railway plus pullman fares and was adopted as a promotional way of attracting customers. It worked. Technology advanced the airplane until some lines became self-sufficient on long hauls and densely traveled routes. Later on, the commercial airlines' contribution of airplanes, know-how, and personnel to World War II amply repaid the federal government and its taxpayers for all the subsidy which has been provided.

The war spurred the development of even more practical and economical vehicles for commercial aviation. It also brought to fruition the Post Office's ambition: a great air-mail service available to the public at no greater proportionate cost to the taxpayer than any other Post Office service. It can today be argued that air mail more than covers its cost.

After the war, subsidy for feeder lines was advanced politically under the banner of public service. The new routes with supposedly adequate supports were eventually granted, but the CAB dictated fares that could be charged equal to that which the trunk-line operators used, even though it was well known that the revenue received had no chance of balancing the cost of the service provided.

#### Free-enterprise or subsidy?

There would now seem to be reasons (\$52 million) for taking a fresh look at this whole system. Shall we try the law of supply and demand under a free-enterprise system or continue to subsidize heavily a half-starved, over-regulated local air service mainly for the benefit of a few individuals and communities without even trying to find out if those individuals would be willing to pay the rightful cost of the service they get? The present CAB philosophy of cheap fares, or "standard" fares, prevents the local service carriers from trying.

No one has successfully argued that the needs of the Post Office would be inadequately served if the passenger were required to pay the cost of his fare. I mean a cost that is equal to that of the service rendered.

The day when feeder operations with obsolete or small aircraft can be of any service or value to the military establishment is certainly past. Jets, missiles, and space vehicles have little in common with the DC-3, a turboprop Convair, or even a Fairchild F-27.

The Post Office and military objectives of subsidy have been admirably taken care of. The question is: Should the

politicians, under the guise of public service, continue to bill the taxpayer for half the cost of carrying businessmen, vacationers, and other travelers to and from small, out-of-the-way places—or, for that matter, to and from big places?

Such a system is in effect, and I am not sure that anyone has tried to find out whether the necessary number of passengers would be willing to pay a compensatory fee. In short, carriers that want to provide better transportation at a price that would be profitable have not been given the opportunity to try.

Is it possible that the CAB could tell local service operators to change what it takes to break even (plus a fair profit) or quit? Why should they be encouraged to continue to operate DC-3s on routes that could be adequately served by smaller airplanes? And is it necessary that they be saddled with pilot pay based on DC-3 minimums and a lot of extras that only subsidy maintains?

Conversely, why should the local operators be discouraged from using big equipment where local demand would justify it? There are vacation spots and large communities fairly close together where big-ship operation would be profitable at fair rates. And there are examples now of hard-working intra-state operators freed of tariff control who are charging what the traffic will bear and succeeding.

Why should an interstate operator be forced to provide his service at half its cost and then have to fight to collect subsidy from the government in order to survive?

#### Nonstops violate the concept

Feeder airlines, as the name implies, were conceived to serve intermediate communities between large trunk-line terminals. The local service carriers' suggestion that they be allowed nonstop operations between large communities already served by trunk lines does violence to the feeder concept and harm to the competitive balance.

Another type of local, or feeder, service is that between large centers and remote communities. In this case, tapering loads are an inherent characteristic, and costs are proportionately higher. Higher-than-normal fares are justified in such an operation, and experience has shown that reasonable load factors can be obtained under this fare system.

Some or both of these types of local service are maintained as part of the trunk-line system, but the extra costs are balanced against the carriers' more lucrative long-haul and high-density services. This practice tends to keep profitable services from becoming excessively profitable.

More of this could be done, for every time a trunk line is allowed to surrender a small community, it reduces its burden or uses the savings to reduce fares on its profitable segments. This increases the government's subsidy burden and heightens competition between the railroad and bus services, which are also essential to the nation's transportation system, the national defense, and the local community. ■

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#### 1.5 Million Noise Trees!

*FAA has proceeded to the contract stage for planting of a million and a half seedling trees which years from now will form the jet noise barrier for Washington's Dulles International Airport. A 1000-ft. wide "green belt" is planned around the new airport, now expected to open by mid-1962.*

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# TECHNICALLY SPEAKING

By Joe Murphy



## What's new in Aruba . . . Those fumes about jet fuels . . . Mr. Halaby, please, no NAFEC

**Aruban sights**—Just back from Aruba and Delta Air Lines' inaugural to this Netherlands West Indian island off the northern tip of Venezuela, much impressed with the Aruba Caribbean Hotel and the weather . . . it's 82 every day and the local papers don't bother with a weather report.

It's so good, in fact, that airport manager Cornelius "Bill" Heemskerk says the airport has been closed only once in the last 12 years when a hurricane passed 60 miles north. Airport people in the U.S. could do well to have Bill brief them on fire protection. He provides an Ansul dry chemical jeep standby for every landing and takeoff, has an automatic alarm system tied in with the tower and the local municipal fire department for standby, small and big emergencies. Also weekly fire drills.

The Aruba Caribbean, a 120-room palace with gambling casino, has boosted airport traffic by 44.8% since it opened in mid '58. Heemskerk expects traffic to jump from 106,549 passengers in '60 to 389,000 by '65 even if no new hotels spring up. But a U.S. syndicate already is negotiating a 300-room resort. No jets yet, but a runway extension to 9000 ft. is planned for 1962.

Found Trans-Caribbean Airways highly regarded in the area, but feel the label TCA which it is becoming known

by can't help but confuse and hinder operations as it grows. A new name, Mr. Chalk?

Returned with Nick Craig, formerly of Icelandic Airlines, as a transient through Havana where a harassing Castro philosophy is very much in evidence. Saw one flight departure in more than an hour on the ground. Was very militaristically shuffled from one room to another, always with a "leader." Plenty of visitors at the airport, but all peering through some locked door.

The day before, Delta's flight was delayed 2:30 hours while customs undressed, searched and re-dressed about 70 departing Cubans. (They didn't start until the flight arrived.) Takeoff from Havana—the best I've experienced in years!

**Barbs from Brabazon**—We wonder how long the headline seeking Lord Brabazon intends to degrade openly the reputation of the British in world aeronautical circles with his ridiculous tirade on kerosene vs. JP-4 jet fuel.

In the U.S. kerosene is used virtually 100%, but right up to the last one of the "big four" was considering JP-4. Economics and availability influenced the decision, not safety. But in any major national emergency, a rapid move to a single civil-military standard (JP-4) is almost a foregone conclusion.

And how fast all of British aviation,

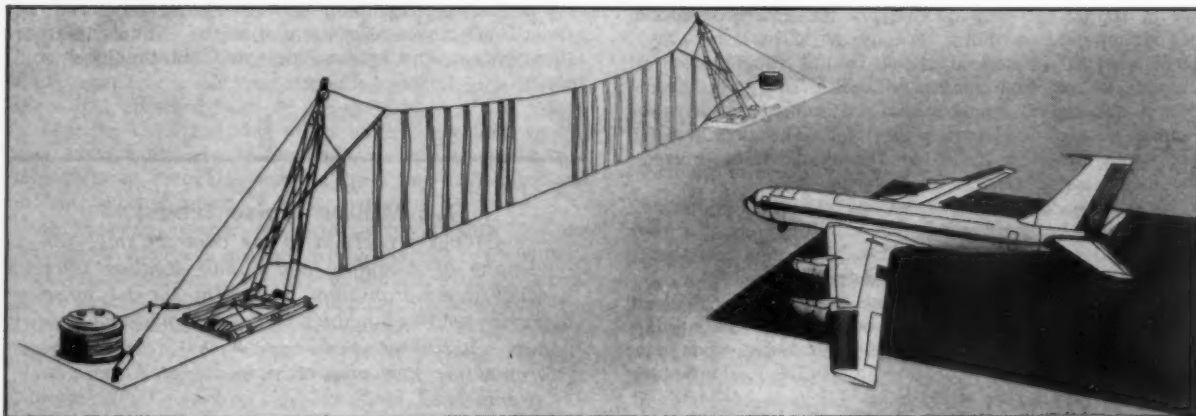
too, would adopt the Lord's mythical unsafe fuel. How gullible a consumer press that honors Lord Brabazon's fuel fancies with even a word of recognition!

**707 hook tests**—FAA engineers are quite impressed with the test results on an arresting hook installed on a Convair 340 and used to prevent overruns and now plans to do the same with its Boeing 720.

It did try in vain to get the Air Force to part with a KC-135 long enough to modify it. The hook is already designed. FAA's report PB 161915 at \$2 a copy is available on the 340 tests. FAA feels hook deceleration loads upon passengers about parallel those of prop reversing.

Sweden's answer, the Befab Safeland arresting gear mentioned earlier in this column, uses a different approach to get the same result (see sketch).

**NAFEC-itis**—Every time we hear this governmentese for FAA's test facility in Atlantic City it reminds us of some incurable disease. The papers that would have changed it to BRAD (Bureau of Research and Development) got to "Pete" Quesada's desk before Jan. 20, but Mr. Q said no. He named it and nobody else was going to change it. We hope Mr. Halaby will do the honors . . . but soon.



SWEDISH ARRESTING gear being developed for big jets uses nylon rope to spread loads over entire wing span.





# COLLINS

## DME

**PINPOINTS YOUR POSITION CONTINUOUSLY**

The accuracy of a pilot's navigation in today's jet age is as good as the system he uses. The Collins 860E-1 DME permits the pilot to fly from point to point with a minimum of delay and increases his efficiency with precise navigation.

Instantaneous, accurate and continuous position information is provided the pilot and ground controllers throughout the flight. DME also permits pilots to easily compute ground speed and ETA's. DME facilitates instrument landing procedures. It enables use of holding patterns that provide both horizontal and vertical separation of aircraft. DME provides additional safety and pilot assurance under all flying conditions.

Economically, DME makes sense, too. DME reduces in-flight time and facilitates straight-in letdowns from cruising altitudes. In flight, more positive holding patterns can be maintained.

Collins 860E-1 DME features: Improved lock-on and a narrow band IF amplifier to assure adjacent channel rejection and prevent false lock-on; modular plug-in design to simplify maintenance and allow for possible future modification; numerous test points to facilitate rapid fault isolation; direct flow cooling system and silicon power rectifiers to minimize heat effect and provide optimum reliability; accurate within  $\pm 0.1$  nautical mile for ranges up to 5 miles and  $\pm 0.2$  nautical mile for ranges between 5 and 197 nautical miles; FAA TSO'd; and shock and vibration resistant construction.



COLLINS RADIO COMPANY

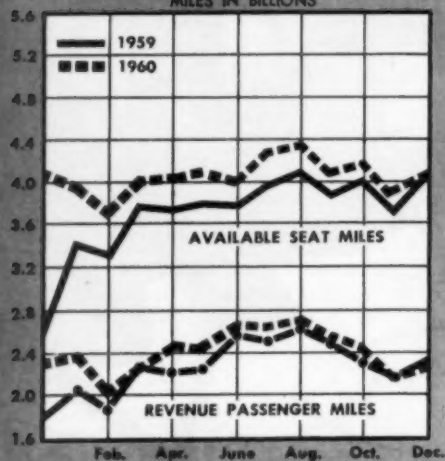
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• DALLAS, TEXAS

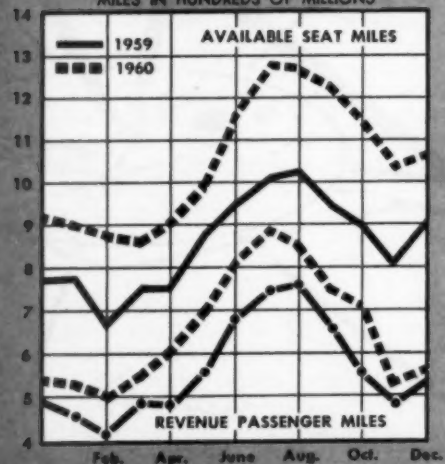
• BURBANK, CALIFORNIA

## HOW'S TRAFFIC Among U.S. Airlines

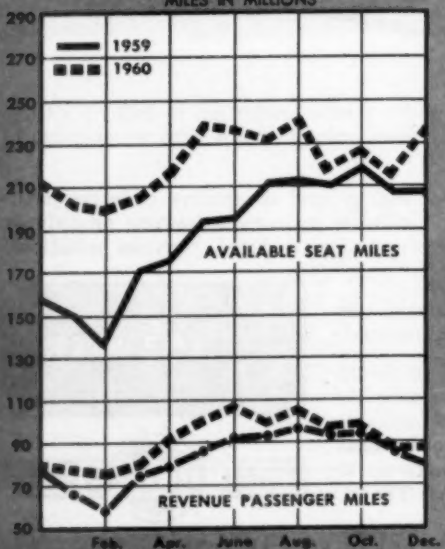
DOMESTIC TRUNKS  
MILES IN BILLIONS



INTERNATIONAL  
MILES IN HUNDREDS OF MILLIONS



LOCAL SERVICE  
MILES IN MILLIONS



## U.S. Airline Traffic for December 1960 vs. 1959

This complete summary compiled by AIRLIFT Magazine from Official CAB data

	Revenue Passengers (000)			Revenue Passenger Miles (000)		
	1960	1959	% Change	1960	1959	% Change
<b>DOMESTIC</b>						
American	580	451	-10.9	446,387	498,931	-6.5
Braniff	171	175	-2.3	82,965	79,177	4.8
Capital	252	292	-15.9	107,123	124,882	-14.2
Continental	105	107	-1.9	70,551	73,849	-4.5
Delta	279	263	6.1	160,109	145,430	10.0
Eastern	590	694	-15.0	335,408	383,971	-12.6
National	138	158	-12.7	87,855	105,065	-16.4
Northeast	104	99	5.1	42,848	44,400	-3.5
Northwest	126	151	-16.4	87,137	119,078	-26.8
Trans World	361	421	-14.2	325,490	381,683	-17.3
United	409	529	-15.1	443,068	543,854	-28.8
Western	122	148	-17.6	73,713	85,455	-14.4
	3,437	3,688	-6.8	2,282,654	2,385,775	-4.3

### INTERNATIONAL

American	9	9	....	7,072	9,081	-22.1
Braniff	7	4	75.0	12,346	8,002	54.3
Capital	31	29	6.9	2,214	2,018	9.7
Delta	2	3	-33.3	2,429	4,508	-46.1
Eastern	46	32	43.8	69,107	47,096	46.7
San Juan	37	26	42.3	56,447	39,894	41.5
Bermuda	2	2	....	1,250	1,594	-21.6
Mexico	7	4	75.0	11,410	5,608	103.5
National	3	5	-40.0	2,166	3,795	-16.6
Northwest	10	14	-28.6	14,800	23,294	-36.6
Panagra	11	10	10.0	19,213	15,721	22.1
Pan American System	243	233	4.3	390,737	351,476	11.2
Latin American	94	115	-18.3	111,769	131,853	-15.2
Atlantic	107	87	23.0	139,567	124,336	12.2
Pacific	37	27	37.0	133,896	91,137	46.9
Alaska	5	4	25.0	5,505	4,150	32.7
Trans Caribbean	NA	NA	....	NA	NA	....
Trans World	25	16	56.3	77,234	43,310	78.3
United	10	5	100.0	25,211	13,015	93.6
Western	4	5	-20.0	6,392	8,361	-23.5
	401	365	9.9	628,921	529,677	18.7

### LOCAL SERVICE

Allegheny	50	36	38.9	10,261	6,440	58.8
Bonanza	20	19	5.3	5,036	4,916	2.4
Central	13	13	....	2,549	2,516	1.3
Frontier	28	27	3.7	7,461	7,148	4.4
Lake Central	15	18	-16.7	2,358	2,920	-19.2
Mohawk	47	45	4.4	9,774	8,921	9.6
North Central	76	69	10.1	13,675	11,495	19.0
Ozark	42	37	13.5	7,667	6,450	18.9
Pacific	34	38	-10.5	8,029	8,757	-8.3
Piedmont	32	34	-5.9	6,994	7,612	-8.8
Southern	27	23	17.4	4,969	3,981	24.8
Trans-Texas	23	24	-4.2	5,425	5,678	-4.5
West Coast	26	28	-7.1	6,483	6,963	-6.9
	433	411	5.4	90,681	83,817	8.2

### HELICOPTERS

Chicago	20	19	5.3	326	332	-1.8
Los Angeles	3	3	....	95	106	-11.6
New York	10	9	11.1	232	183	26.8
	33	31	6.5	653	621	5.2

### INTRA HAWAII

Aloha	NA	NA	....	NA	NA	....
Hawaiian	39	40	-2.5	11,220	7,590	47.8

### ALASKA

Alaska	9	10	-10.0	8,675	8,111	7.0
Alaska Coastal	3	3	....	359	323	11.1
Cordova	1	1	....	136	128	6.3
Ellis	4	4	....	207	245	-15.5
Nor. Consolidated	1	2	-50.0	485	474	2.3
Pacific Northern	10	7	42.8	9,602	6,768	41.9
Reeve	1	1	....	950	700	35.7
Wien	2	1	100.0	414	639	-35.2
	31	29	6.9	20,828	17,388	19.8

### ALL CARGO

(Ton-miles in thousands)

	Freight			Total Scheduled			Total All Services		
	1960	1959	% Change	1960	1959	% Change	1960	1959	% Change
AAXICO	NA	No Operations	....	NA	NA	....	NA	NA	....
Flying Tiger	5,927,595	7,493,218	-20.9	5,992,781	7,401,531	-22.0	11,243,930	5,740,905	33.8
Riddle	NA	NA	....	NA	NA	....	NA	NA	....
Slick	157,962	517,860	-69.5	157,962	517,860	-69.5	375,953	6,332,864	-90.8
Aerovias Sud	1,815,184	2,097,988	-13.5	3,549,752	3,570,057	-0.6	4,162,317	5,670,943	-26.6
Seaboard & Western	7,900,741	10,109,066	-21.8	9,700,495	11,769,448	-17.6	17,000,062	26,777,641	-36.5

NA—Not Available.



*Wayne Parrish reports to the travel industry:*

## "Tropic Paradise to sell near at hand in PANAMA!"

One of the nice things about selling air travel South of the Border is that you can always promise a Magic Carpet ride into a new land of romance.

Take Panama, for example. Panama is only a few hours from New York; with today's jetliner speeds it seems like a suburb of Miami. But Panama is deep in the tropics—a most exotic place for the vacationer without enough days (or dollars) to take an extended tour farther south.

What does your customer want? Is he a history bug — the kind who prowls art galleries and battlefields? Then sell him historic thrills in Panama. Promise him the view by moonlight of the ruined battlements where Henry Morgan's pirates broke through Spanish defenses



Here the dashing buccaneer, Henry Morgan, dashed Spanish hopes in 1671.

in the storm and sack of 1671. Suggest that he ride across Panama on one of the tours that can easily be arranged. He will be retracing the steps of thousands of "Forty-Niners," who crossed the isthmus as a short-cut to California's gold.

And don't forget about historic art. In churches left by colonial Spain there

are pieces — rare, but authentic — that are worthy of the Prado or the Escorial.

And for those who prefer luxury, excitement and sophisticated amusement, Panama City has a beautiful welcome



Stately serenity: the United States Embassy seen through Panama City palms.

mat out. One conspicuous spot is the Casino — well up to the best Las Vegas standards.

There are many fine hotels — notably the new Panama Hilton — that present surroundings to suit all tastes. Hotel and restaurant cuisine runs the gamut from stateside food to exotic tropical dishes, expertly prepared and served. (Incidentally, while I don't recommend intemperance, I will say that bartenders in Panama are artists in the concoction of miraculous rum drinks, as well as the more common beverages.)

You can arrange jungle trips that will satisfy the urges of the most safari-minded—trips into the back country where the most primitive Indians live, and water trips on parts of the Canal. For the rugged, there are even trips into the mountains where you can emulate stout Cortez and gaze (southeast, by the way) at the Pacific from a peak in Darien.

Of course, Panama is famous as a place to buy merchandise from all the world, usually at quite advantageous prices. One thing that's available in high quality and at a reasonable price is a Panama hat—the real, simon-pure, genuine *Ecuadorian* product!

I have occasionally recommended in this series that one of the best things a travel agent can do is sell his first Latin American ticket to himself. Acquaint yourself with the selling opportunities in Panama. The trip will take you away from your desk for only a week, if you wish. But it will bring you back fortified with a grand "vacation feeling" and a wonderful collection of sales ideas.

### The 1961 Braniff "El Dorado Holidays" Tour Manual for Travel Agents.

To help you sell tours in Panama, Braniff has published a complete tour guide to all Braniff-sponsored tours for 1961. It includes complete itineraries in South America, Central America, Mexico, Canada and the United States. All the tours are produced by recognized tour operators (36 of them) and go to just about any place your clients might want to, any time of the year.

What's included? Everything. Prices, commissions, itineraries, dates, accommodations, routes, operators, where to get folders and display materials, maps, transportation and hotel information — and much more, for over 120 tours.

We assume you've gotten your copy. If not — or if you'd like an extra — write us: Tour Department (El Dorado Holidays), Braniff International Airways, Exchange Park, Dallas, Texas. (And if you'd like more specific information on Panama, write for that, too.)

*Your clients belong on Braniff*

# BRANIFF

*International*

# AIRWAYS



# Wilcox Develops 'GAT Box' For FAA

By PHIL GERACI

Wilcox Electric Co. is well along in development of a lightweight, transistorized transponder for general aviation and expects to be able to begin deliveries by late this year.

The Kansas City manufacturer has been working under a Federal Aviation Agency contract in the development of a "miniaturized" version of its model 714 transponder, the "full size" unit now in operation by several airlines.

The General Aviation Transponder is model 814. It will comply with technical specifications set up by FAA's Bureau of Research and Development for an "inexpensive, lightweight transponder" which will function in the existing ATC radar beacon system.

The circuits will be housed in a 3/8 ATR short unit. Dimensions will be 12-9/16 in. long, 7-3/4 in. high and 3-11/16 in. deep. Weight will be approximately 10 lbs.

The model 814 unit will permit the pilot to select any one of 64 different coded replies which may be followed by an identifying pulse if the ATC system demands it. Sidelobe suppression, in line with the U.S. three-pulse specification, will be included.

The transponder will provide useful service out to 200 miles from a beacon. By judicious use of transistors, Wilcox engineers have been able to reduce input power without sacrificing output power. Power output characteristics are very similar to the larger transponder.

Wilcox expects to see a healthy mar-

ket develop among executive aircraft operators. Many now are equipped with high performance aircraft. As FAA moves ahead with its beacon program, Wilcox expects owners of such aircraft to become choice model 814 customers.

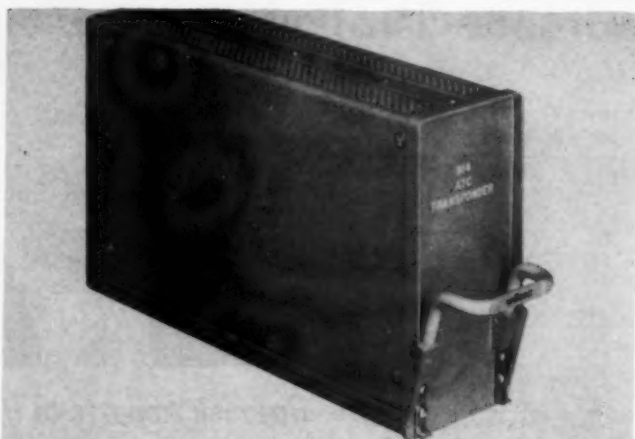
The larger transponder was tailor-made to Arinc Characteristic 532. It is a 1/2 ATR unit, at 4-7/8 in. wide, 19-9/16 in. long and 7-5/8 in. high. It weighs roughly 25 lbs.

It has been a Wilcox project for more than five years. More than 500

model 714s have been delivered and are now in use.

The current model—an "updated" version of the original model 714—can be delivered with circuitry to match the FAA three-pulse system or to accommodate three-pulse and two-pulse interrogations automatically. It also will permit automatic altitude reporting when ground facilities are available.

Wilcox gives the list price of the model 714 as \$3745 for the 714C-1, the three-pulse model, and \$4175 for the 714C-2, the automatic version. ■



*MINIATURIZED transponder for general aviation will be 3/8 ATR short unit, will provide service out to 200-mile range.*



*AIRLINE VERSION is Model 714B (left). Beside it are control unit and antenna. Box at right is function tester for in-flight testing.*



**DC-8** can cross the country in  $4\frac{3}{4}$  hours, flies the Pacific in  $8\frac{1}{2}$  hours, the Atlantic in  $6\frac{1}{2}$ .

**DC-7** was the first airliner to provide scheduled non-stop service coast-to-coast.

**DC-6** appeared in 1946. By 1953 the "6's" were flying more than 500,000 route miles daily for 27 airlines.

**DC-4** pioneered transocean flight. This 4-engine aircraft carried the brunt of the Berlin airlift.

**DC-3** — Douglas built almost 11,000 of these famous 21-passenger airliners. Thousands are still in service.

## Five big steps to a smaller world

How narrow the oceans have become! How small the world! And how quickly the shrinking has occurred!

Within a generation, man has stopped wondering if he would ever fly, and now asks how soon he will land on the moon.

Douglas, builder of the 5 great "DC" airliners that did so much to shrink the world you live in, is now at work on the great rockets and rocket ships which will shrink the solar system.

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GROUND SUPPORT EQUIPMENT



# Pylons Quiet New Salt Lake Terminal

**Several soundproofing innovations will be used to make new jet terminal one of nation's quietest**

**By DANNA KUSIANOVICH**

The roar of big jet transports will be reduced to little more than a background murmur inside Salt Lake City's new \$4 million airport terminal, now slated to open its doors to the public on June 1.

Several soundproofing innovations have been employed by architects, Ashton, Evans & Brazier of Salt Lake City, to make the ultra-modern building one of the quietest in the nation.

The terminal complex, which incorporates a total of 225,000 square feet of floor space, includes the main building with two connected concourses, a separate utility building, and an air cargo/freight building. It is part of a \$7.5 million airport expansion

program, other features of which are a new 10,000-foot instrument runway adjacent to the terminal, taxiways, aprons, and parking lots for 800 cars.

The new terminal represents a five-fold increase over present facilities and is expected to serve traffic projected for the foreseeable future. Traffic for 1959 shows 129,451 aircraft movements, 846,634 passengers (including enplaned, deplaned, and through), and 910,695 non-passenger visitors (a two-week count established a ratio of 3:1 between visitors and enplaned passengers). Projections for 1970 are for 926,331 to 1.3 million enplaned passengers and 2.9 to 4.3 million total airline passengers. Use of the 3:1 ratio would mean 2.7-3.9 million building visitors.

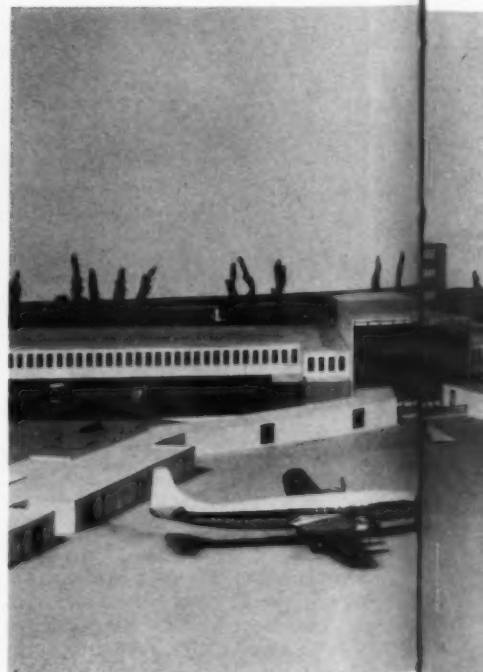
The terminal provides 21 gate spaces

for the five airlines servicing the Utah capital—United, Western, Frontier, Bonanza and West Coast—and the design permits eventual expansion to 42 gates through addition of a third concourse. In addition, the waiting room can be increased by 50 per cent without major alterations, the ticketing and baggage wings expand to "any practicable length," and the air cargo building's size can be doubled or tripled, according to Airport Manager Joe Bergin.

The three-story center section of the building is fan-shaped, and houses the waiting room, a first-floor (150-capacity) coffee shop, a second-floor (70-capacity) employees' cafeteria, a third-floor (200-capacity) "sky room" restaurant; FAA offices; and concessions.



**AERIAL VIEW** of airport construction near Salt Lake City shows how new terminal complex will fit into rugged surroundings. City and present facilities are in background.



**MODEL** of new terminal shows floor to ceiling glass windows, passenger walkways.



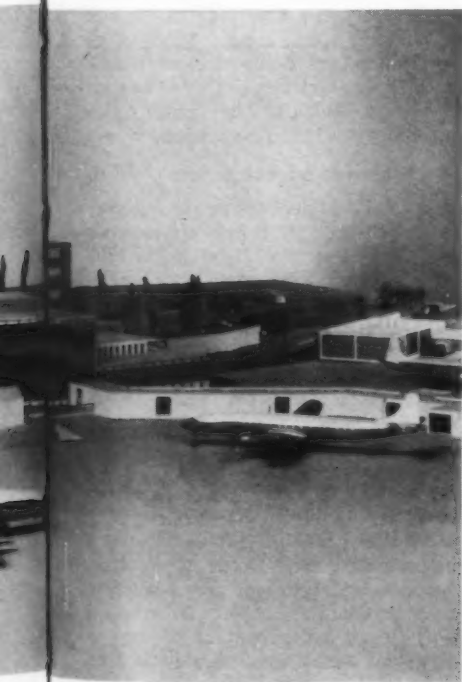
One of the most striking architectural features of the building is also its most unusual noise-dampening feature. This is the use of 18 narrow shaped-metal pylons running vertically on the outside of the 35-foot-high wall of gray glass which makes up the terminal's ramp side. The perforated pylons, filled with waterproofed sound-deadening material, intercept up to 55% of the sound waves which, say the architects, would otherwise be transmitted through the glass.

#### **\$3.3 million federal aid**

The construction program, which Bergin believes will give Salt Lake City one of the nation's outstanding jet airports, was financed with \$3.3 million in federal aid, the remainder of the cost coming from municipal revenue bonds backed by airport revenues.

Contractor for the terminal was Christiansen Brothers Inc. of Salt Lake City, and construction costs figured out to \$17.90 per square foot. The airport is owned and operated by the Salt Lake City Corp., and is under the general supervision of L. C. Romney, commissioner of Parks and Public Property.

The airport's location less than 10 minutes from downtown, makes it among the most convenient in the country. The city plans to continue to operate the old terminal, built in 1929, as a general aviation facility offering lobby space, conference rooms, office space and a coffee shop. ■



**ENGINEERING**

## **European Firms See FAA Nod as Omen of Success**

**Listing on project slate implies free advice from U.S. engineers**

PARIS—Stamp of approval by the Federal Aviation Agency is regarded by European aircraft manufacturers as mandatory for the success of an aircraft these days.

Foreign manufacturers are eager to have their models listed as certification projects by FAA because to do so puts them in line for free advice from American engineers. Most of the world's certification authorities charge a fee, but FAA is not allowed to receive payment for its service.

FAA cannot refuse to accept a project even though the model would never meet U.S. standards or find a U.S. market when certificated. There is a limit to the time a project can remain on the FAA list: Five years for transport aircraft (and transport helicopters); three years for light aircraft and small helicopters.

#### **Staff and budget limited**

Robert Meyersburg, who heads the FAA European engineering office in Paris, tries to work out a realistic schedule in the light of limited staff and budget. With responsibility for close to 100 aircraft/helicopter, propeller and engine projects, the allocation of time and travel funds becomes a problem. Transport aircraft projects take the most time. By the time this article is off the press certification of the de Havilland Comet 4C (the version bought by PAA's Mexican affiliate CMA) and the Armstrong Whitworth Argosy (ordered by Riddle) should be achieved. The Vickers Vanguard (ordered by TCA), could also be certificated very quickly since FAA's work on it is 90% complete. The remaining 10% won't be done until there is a definite U.S. customer for the turboprop aircraft.

The Caravelle 3 has already been certificated and FAA is now working on the Caravelle 6, 6R (the United version) and 7 (powered by the GE CJ805-23). Work on the 6 was almost complete by January 1.

The 6R probably will be certificated in the early spring. Target date for Caravelle 7 certification has not yet been determined but it is not likely to be much before the end of 1961. The Caravelle 14, with a new Douglas-designed wing, is also on the FAA list, but this is still largely a manufacturer's project.

FAA cannot do much work on certification projects until metal has been cut. The VC-11 and BAC-107 rear-engined jets and the de Havilland 125

Viper-powered executive jet are merely listed.

FAA is awaiting evidence of U.S. customer interest in the VC-10 before embarking on what would clearly be a major project. The three-engine DH-121 Trident will soon come in for detailed attention. In a few months roughly 40% of the FAA's work on the project will have been completed.

The Avro 748 twin-Dart DC-3 replacement is well into its flight test program and FAA expects to be able to certificate it in the fall. Almost no work has been done on the Handley Page Dart-Herald since there is no evidence that it will find a U.S. market.

Work on the French four-turboprop "baby Viscount," the Potez 840, is about 15% complete. Two other French turboprop transports listed are the Holste Super Broussard and the Breguet 941 STOL aircraft. A start has been made on certification for both.

FAA has completed almost half of its work on the Short Britannic, a Tyne-powered high-wing freighter derivative of the Britannia.

Various rotorcraft—from the Westland/Fairey Rotodyne to the little Dutch ramjet-powered Kolibri—are FAA certification projects. Also included are the Sud Alouette 3 (the Alouette 2 has already been certificated), the big Sud Frelon (primarily designed for naval use), the Frelon-like Agusta 101G, the Agusta-Bell 204B, and the Lualdi L-59.

#### **Italian designs listed**

FAA has applications for the certification of various Italian light aircraft designs and one Belgian model; also, for three sailplanes. Nearly every country in Western Europe is represented.

Austria offers the SGP M-22, an executive model resembling the Cessna 310. Switzerland has the Pilatus P-6 Porter, a single-engine utility transport. A somewhat similar model is Lockheed's LASA 60 which is to be built in Italy by Macchi. Also listed are two twin-piston-engine utility transports—the Short Skyvan and the Dornier Do 28.

FAA's Paris office has more than 40 aircraft certification projects on its list. Also included are numerous engine projects: the piston Alvis Leonides; Rolls-Royce jets; a small two-cycle glider power-plant and a variety of Turbomeca turbines. Propeller projects involve British (de Havilland and Rotol) and French (Ratier) models. ■



## Landing Fee Hike Likely At Major British Airports

**IATA protests fail to stall plans to up fees by one third after April 1**

LONDON—Despite IATA protests on behalf of more than 40 airlines, including BOAC and BEA, using airports in the U.K., the Minister of Aviation, Mr. Peter Thorneycroft, has declined to alter his decision to increase landing fees at ministry-owned airports by about one-third after April 1.

The reason for the increase is to try to reduce, as far as possible, continuing deficits on airport operations which have been targets for criticism in both parliament and press for some time. In the year ended March 31, 1960, the overall deficit on the 26 airports run by the ministry was nearly \$15.5m, compared with a deficit of \$17.8m in 1958-59.

The deficit on the three major international airports of London, Gatwick and Prestwick amounted to \$7.56m, compared with just over \$10m in the previous year. London Airport itself earned an operating surplus, but this was turned into a deficit after providing for interest on capital and certain administration expenses.

### Users should pay costs

The ministry's view is that airports are run for the benefit of aircraft and air passengers, not the general public at large, and that if airports are to be run at all there is no reason why the taxpayer should subsidize them. This is why landing fees are being increased—the burden of rising costs is being thrown back onto those who use the airports.

Passengers already bear their share of the burden, through a "passenger service charge" of 7s.6d. (roughly, one dollar) payable by every passenger departing from the U.K. through a ministry-controlled airport. It has been suggested that this charge might also be increased slightly, but so far the ministry has preferred to stack the increase onto landing fees.

The airlines' attack on the ministry is based on several counts. One is that the increases will make London, Prestwick and other ministry airports among the most expensive in the world—indeed, London will be the most expensive—at which to land a Boeing 707 or Douglas DC-8.

### London fees will be higher

The new landing fee at London for a jet, for example, will be \$472—or substantially higher than Idlewild, Chicago, San Francisco, Los Angeles, Paris, Rome and Frankfurt. The airlines argue that if other airport authorities throughout the world followed the U.K.'s example, the result could be a severe inflation of air transport costs, at a time when carriers are fighting to get costs, and fares, down.

Another argument put forward is that for the money they pay, the airlines don't get enough service. They do not deny that the technical facilities offered at U.K. airports are among the best in the world, but that in certain other directions, notably passenger handling and road transport facilities, those airports are frequently deficient.

There's a lot to be said for both sides. The airlines have made a concrete suggestion for the establishment of a special airport authority, independent of the ministry, which would own and run all the airports on a strictly commercial basis.

So far, the idea has been cold-shouldered by the ministry, which is trying its own methods of "hiving-off" airports to municipal authorities throughout the country where ever it can.

The trouble is, municipalities can read profit and loss statements as clearly as anyone else. They see no reason why they should take over airports which are already running at a loss and which may lose more money in the future as the demands of air

transport become more complex and expensive.

It seems that airports in the U.K. will continue to be run by the ministry for a long time to come, and that the costs involved will rise also. Far from having landing fees cut, or the presently-proposed increases muted a little, airlines will have to face the prospect of further increases in the years ahead.

### Big issue for independents

Landing fees are not the only subject of contention in British air transport just now. Another is the question of what kind of "new deal" the independent airlines are going to get from the newly-established Air Transport Licensing Board, set up under the Civil Aviation (Licensing) Act, which is now law.

The aim of the Act, and the Board, is to give the independents a better chance of sharing in the expansion of overall British air transport effort in the years to come. Already, the Act has broken the monopoly powers of the two state airways corporations, and given the independents the right to bid for services in competition with them.

Now, one of the biggest independents, British United Airways, is putting the Act and the Board to the test. British United has told the government bluntly that it wants an extensive new route network throughout Europe, with additional services to colonial destinations and to vacation-centers in the Mediterranean and elsewhere.

If it gets this new network, it will be ready to spend around \$56m of its own money on a new fleet of British jet airliners—Vickers VC-10s and de Havilland Tridents. The carrier's line is—no network, no jet orders.

### Much hinges on outcome

A good deal depends on the outcome of this struggle. If British United wins and gets its network, the British aircraft industry will benefit with sorely-needed orders; the British public will get alternative services to international destinations; and the whole of the British independent air transport industry will be given a fillip for further expansion.

If British United fails, it will be proof that not only is the new Licensing Board a flop, but also that the government, despite its conservative "free enterprise" philosophy, is not interested in promoting the growth of the independents and does not care what happens to them.

It is not going too far to say, in fact, that in this, its first big test case, the new Licensing Board holds in its hands the future of a large segment of British air transport.

## Airportia Britannia

While we haven't been silent ourselves on the subject, we were abundantly pleased with these wise words of Anthony H. Milward, chief executive of BEA, recently on the management of British airports.

"I think Britain has a great deal to learn from the Americans about the planning, layout and operation of airports. Planning here (speaking from the U.S.) is far more imaginative and forward thinking. We in Britain are simply making additions here and there to airports, whereas the planners of Los Angeles, Chicago and New York airports, for instance, are looking ten years ahead."

Mr. Milward said he felt there should be more commercial minds behind the running of British airports . . . "I should like to see them run by an independent air agency on the lines of the excellent Port of New York Authority," he concluded.

### ON-TIME BOXSCORE

NOVEMBER, 1960

Airline Ranking      On time to  
15 min. late

#### TRUNKS

1	Braniff	83.9%
2	United	83.0
3	TWA	82.0
4	National	81.4
5	Continental	81.2
6	Eastern	80.5
7	American	80.1
8	Northeast	79.7
9	Western	79.3
10	Northwest	75.4
11	Capital	74.3
12	Delta	64.2

#### 707 & DC-8

1	National	83.3%
2	TWA	79.2
3	Northeast	76.6
4	Continental	76.5
5	Braniff	74.8
6	United	74.3
7	Western	74.1
8	American	70.9
9	Eastern	68.9
10	Delta	59.2

#### 720

1	United	82.9%
2	American	65.4

#### 880

1	Delta	44.3%
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#### ELECTRA

1	Braniff	92.3%
2	National	82.4
3	American	78.8
4	Eastern	70.1
5	Western	63.9
6	Northwest	31.3

#### LOCAL SERVICE

1	Piedmont	93.1%
2	West Coast	91.3
3	Central	91.0
4	North Central	81.3
5	Frontier	80.2
6	Allegheny	87.43
7	Ozark	87.41
8	Bonanza	68.2
9	Southern	63.7
10	Trans-Texas	52.9
11	Pacific	50.5
12	Mohawk	45.4
13	Lake Central	No Report

SOURCE: AIRLIFT Research

## Research Responsibility Results

## FROM SATELLITES TO SAFETY HARNESS . . .

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# TWA Parts Control Linked to Computer

**World-wide communications net aids transfer of data between field stations and Kansas City**

TWA has installed a centralized maintenance system at Mid-Continent Airport near Kansas City with a communications and data processing link to 73 cities in the U.S. and 23 bases elsewhere along the airline's 50,000 route miles.

The international carrier spends nearly \$84 million annually on maintenance. The new system, inaugurated in January, features a Royal Precision LGP-30 computer which is used in conjunction with a world-wide teletype system. Daily reports received by wire from bases in other countries can be analyzed by the computer in minutes and the results teletyped back.

A major segment of TWA's maintenance program involves keeping tabs on more than 10,000 powerplant parts and 20,000 airplane parts designated as time-controlled units. Subject to strict control by FAA, these units must be replaced periodically as use-time mounts.

Under TWA's integrated system, the computer keeps track of the hours accumulated by each unit under control. The Royal McBee instrument is desk sized, yet it has sufficient capacity to monitor more than 6000 different units used on 184 aircraft.

Each morning, the LGP-30 is fed information on every craft in the fleet. Previously, this information took days to arrive from distant bases. The teletype-computer combination provides current, comprehensive reports which formerly were impossible.

### **Low-cost, high memory**

The LGP-30 is a low-cost, high-memory computer with a simple command structure of 16 commands such as "add," "subtract," "multiply," and "divide." It has space for 4096 words in its memory. It is located in the maintenance administration office rather than in a centralized data processing group. TWA personnel spent two weeks at Royal McBee's computer course to master the unit's operation.

TWA says the computer:

- **Speeds accumulated-hours reports.** Daily rather than bi-weekly reports on time-controlled unit changes coming due are now available. Unit time since overhaul is computed and printed automatically as changes are fed in.

- **Facilitates aircraft scheduling.** Lead time needed to schedule engine and other unit changes has been reduced as much as 50 per cent.

- **Facilitates shop scheduling.** Accurate computer forecasts of future work assists in planning the shop workload.

- **Maximizes utilization of time-controlled parts.** Time-controlled parts are now being run nearer to their allowed limits due to the daily updating of the aircraft files.

- **Forecasts maintenance-due dates.** Such forecasts for powerplants and other components are prepared in a fraction of the time previously required.

- **Increased data processing capacity.** The volume of time-controlled unit activity is increased approximately 50% by the addition of jet fleets. Aided by the computer, this additional work-load is being handled with present personnel.

- **Updates part history cards.** Part history cards for more than 30,000 time-controlled parts are posted in half the time through the use of computer reports.

Three major computer programs are in use at TWA with others scheduled for the future. The powerplant program, the first to go on-line, rides herd on more than 800 piston engines and 188 jet engines as units, plus 6 to 10 time-controlled parts per piston engine and 15 units per jet engine.

Time-controlled powerplant parts are short-hour units whose service life falls far short of the airframe overhaul times of 4000 hrs. for piston aircraft and 3000 hrs. for jets. Jet engines must be removed and inspected at least once during each overhaul cycle. Piston engines are pulled after 1500 to 2200 hours of service for overhaul. Time-

controlled parts include propellers, power recovery turbines, turbo compressors, jet fuel controls and others.

Stored in the computer's memory are plane numbers, engine numbers and locations, time-controlled unit serial numbers and the time since last overhaul for all items, plus basic program information on FAA-allowed time limits. Each morning, the previous day's flight hours for every aircraft are received, punched into tape and fed into the computer.

Input is plane number and flight hours. The computer finds the right plane listing and updates all items. It then checks certain specified parts against the FAA maximum time limits and prints out the time the part change must be made and remaining hours. Part removals are read into the computer daily.

### **Statistics by fleet**

Since TWA divides its aircraft into fleets based on plane types, all computer programs are run by fleets. The basic information on maximum time limits and parts stored in the computer varies by plane, necessitating this common-plane approach.

Updating powerplant time-controlled units, searching for unit changes and punching out a new master file takes about 90 seconds per plane. The largest of the nine fleets—28 planes—is processed in fewer than 45 minutes.

Time-controlled parts that have exhausted their allowed time are returned to the Kansas City maintenance base for complete overhaul. Unit time reverts to zero hours. Parts that are removed because of a malfunction are sometimes repaired and continue to accrue time in service until reaching the FAA specified maximum.

Approximately 6000 different units are repaired in TWA shops. The production rate of these units is 430 per day. About 100 piston engines are overhauled each month. The jet engine overhaul rate is presently 32 overhauls

per month. With the Convair 880 fleet, this will increase to 65 jet engine overhauls per month.

Time on the airframe itself and associated airframe parts such as cockpit instruments, landing gear and automatic pilots is also controlled by the computer. Tabulating time on the airframe is straightforward accounting. Controlling time on airframe parts is similar only in some respects to controlling time on powerplant parts.

Unlike powerplant parts, airframe components are long-hour units whose useful life generally exceeds the airframe overhaul period of 3000 to 4000 hrs. Previously, these parts—numbering about 80 for piston craft and 130 for jet—were updated only when the plane arrived for overhaul.

#### Reports available daily

By putting the airframe program on the computer, an accumulated hours report is available daily. Given this information, it is now economically possible to run parts nearer to their allowed limits, changing them between base overhauls during regularly scheduled checks.

Once parts have been removed, part history cards must be brought up to date. By printing out complete information on part removals the computer has helped halve the posting time.

The plane file tape containing complete information on the plane and parts is not stored in the memory, but is run through the computer one plane at a time. The computer upgrades time and makes all pertinent part changes. It notes whether or not newly installed parts will reach the next airframe overhaul without exceeding specified overhaul limits and points out exceptions with the aircraft time at which the units must be removed.

Alterations to the master file are then printed out for use with next day's updated run. The complete updating transaction requires fewer than two minutes per plane on the average. Error checks throughout the program guarantee accuracy.

As an aid to scheduling and planning, TWA has built a unit change simulation program now used only for complete powerplants which presents a 30-day forecast of engines that will come due for inspection and overhaul. Based on assumed conditions proven by past experience, the program print-out is an itemized list of engines and maintenance-due dates.

Current computer programs represent only a segment of the workload planned for the future. Since the time-controlled part program has produced savings in maintenance costs through maximum utilization of part life, it will be expanded to include additional parts. ■



DESK SIZED LGP-30 computer is located in maintenance administration office. TWA personnel spent two weeks at Royal McBee's computer school to learn to operate it.

AIRCRAFT NUMBER	LOCATION POST	SERIAL NUMBER	DUE DATE	REASON	TIME
7731	1 ENG	2008	4/23/60	insp	400;00
7731	2 ENG	2074	5/2/60	insp	754;00
7731	3 ENG	2025	4/7/60	insp	400;00
7731	4 ENG	2003	5/2/60	insp	783;00
7732	1 ENG	2088	5/14/60	ovh	1000;00
7732	2 ENG	2029	4/27/60	insp	400;00
7732	3 ENG	2089	4/27/60	insp	756;00
7732	4 ENG	2087	4/20/60	insp	777;00
7733	1 ENG	2081	4/28/60	ovh	1000;00
7733	2 ENG	2009	5/3/60	insp	796;00
7734	1 ENG	2014	4/17/60	insp	400;00
7734	2 ENG	2064	5/13/60	insp	679;00

FIGURES printed out by computer show location of time-controlled parts and indicate when inspections and overhauls are due. "Time" is hours since overhaul.

AIRCRAFT undergoing overhaul is shown in TWA's Kansas City shop. Computer keeps tabs on parts requiring overhaul, simplifies maintenance bookkeeping for airline.



# High Intensity Mercury Lamps Light AA's Idlewild Hangar

Mercury vapor lamps installed at American Airlines' hangar at Idlewild provide a glareless, high-intensity light source which eliminates shadows under berthed aircraft and does away with the need for portable stanchion lights even for close-up servicing.

The AA hangar measures 756 by 356 ft. It is large enough to shelter ten 707 transports at once. Yet mercury vapor lights provide more than three times the amount of light conventionally found in aircraft hangars.

Engineering the lighting installation was the Holophane Co., Inc., 342 Madison Ave., New York, specialists in industrial lighting.

The AA hangar is partitioned into three longitudinal sections by two walls. The two outer hangar sections are for planes, while the 74-ft. wide center section is for offices, classrooms and storage areas.

In planning the lighting system, desired illumination level, most suitable lighting equipment, structural restrictions, and maintenance requirements were considered.

The illumination level was specified as 60 to 65 footcandles at two ft. six in. above the hangar floor. Foot-candle readings in most hangars range

in the 20s and below, and American's high level of lighting is a new approach to hangar illumination.

To determine the total lumens required to illuminate the structure, calculations were made for both fluorescent and mercury vapor systems. It was found that 858 fluorescent units would be required versus 740 mercury vapor units. The fluorescent load would have been 412 kw opposed to 332 for the mercury system. Mercury vapor was selected.

## Replace lamps monthly

It was decided to use fixed lights with a mobile elevating platform for lamp replacement. Burned out lamps are replaced monthly. To date, replacements have been around 1%.

There was a choice between single 1000-watt units and twin 400-watt units. The economics slightly favored single units but practical considerations pointed to the twin units. Structural members of the trusses made spacing of the 1000-watt units difficult—if spaced as required to provide the desired illumination, spacing would not be symmetrical and might conflict with structural elements in some locations. If spaced uniformly, more units than

necessary would have been required.

The twin units have the added advantage of reducing the interception of light by planes in the hangar: the more lighting units there are, the less obstruction of light output by objects in the lighted area.

The lights were spaced on 20 ft. centers across the hangar. Due to roof trusses and interconnecting members, they were placed on 15 ft. centers in the lengthwise direction. They are at the same height as the lower surfaces of the roof trusses.

Power for the lighting comes from a 480/277-volt bus running above the rooms of the center section. More than fifty 277-volt lighting circuits are connected to the main bus. Each circuit includes four to six twin Holophane units plus mercury-vapor transformers. Five control panels are spaced along each partition wall so that lighting can be controlled from within each area.

The mercury lights are operated only when an airplane is being serviced. Otherwise, 1000-watt incandescent "night lights" provide illumination for "walk through" purposes.

The high-bay fixtures were specifically engineered to illuminate working areas from extended heights. They are made of prismatic glass reflectors sealed in metal. The inner surface of the reflector is smooth and does not normally collect dust.

## Ridges eliminate glare

The outer surface is corrugated with top-to-bottom prismatic ridges that diffuse the high intensity light in a controlled pattern. Glare is eliminated.

The Holophane reflector, being glass, is free from corrosive effects. All steel parts are plated for protection. The reflectors require no bottom glare-covers or guards, so lamps can be changed easily.

The Holophane reflectors are relatively easy to install (see diagram). Under the Holophane design, the mercury vapor reflector does not have to be installed until the wiring is complete.

The incandescent reflectors are similar, but are designed to different characteristics. Both reflectors have drip shields to prevent condensation from dripping onto the hot lamps. Reflectors are also open at the top for heat dissipation.

To date, no complaints have been received from AA mechanics of insufficient lighting. Several airlines are reported to be studying the installation.

The Holophane Co. has completed or is planning installations for Eastern Air Lines at Logan Field in Boston; American Airlines at O'Hare in Chicago; and Purdue University at Indianapolis.

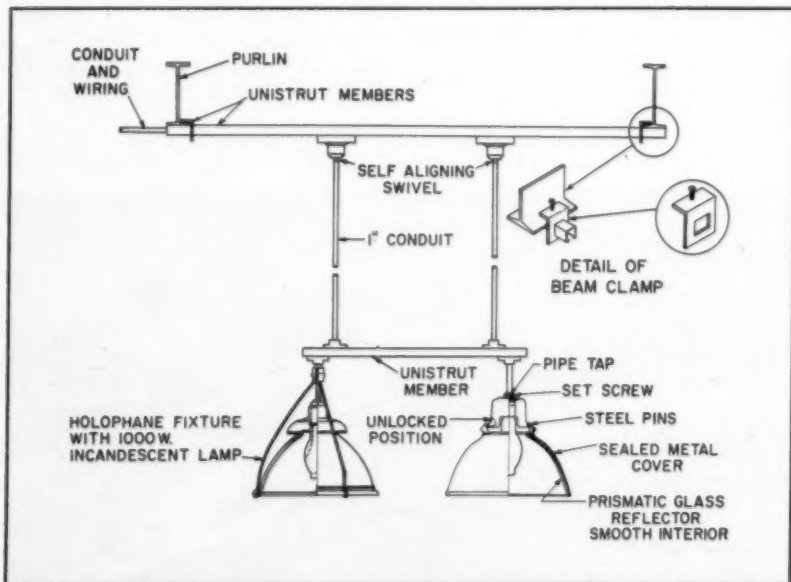


DIAGRAM ILLUSTRATES details of Holophane installation. To left is 1000-watt incandescent fixture. Mercury vapor unit is shown at right.



## IN THE AIRLINES

Capt. **Phillip Miller**, who has been Qantas' New Guinea area mgr., appointed technical training mgr.

**Gilbert Carter**, air and defense correspondent for the London Daily Herald for many years, named U.S. public relations officer of BOAC, succeeding the late **G. A. W. Wynne**. **David Lobb**, former central states press officer, becomes Carter's asst., succeeding **Pat Dunn Davis**, who resigned to form her own pubrel firm.

**Max U. Wirz**, of Swissair's cargo sales dept., named U.S. cargo sales promotion mgr.

New appointments and assignment of increased responsibilities among United's top management include: **Curtis Barkes**, senior v.p.-finance and property, becomes executive v.p.-finance and property; **A. M. deVoursney**, v.p. and treasurer, is advanced to executive v.p.-administration; **R. E. Bruno** advances from comptroller to v.p.-treasurer; **D. S. Ritner** is named v.p.-employee development; **C. F. McErean** advances from v.p.-law to senior v.p.-law.

Major changes in Braniff's maintenance division: **John Sullivan** promoted from asst. to v.p.-operations to executive asst. to v.p.-maintenance; **R. E. Sawyer** from chief engineer to mgr. of engineering; **B. A. Minter** from gen. supt. of Dallas maintenance base to mgr. of aircraft maintenance; **Frank Achilles** from asst. chief engineer to mgr. of production services; **G. D. Smith** from director of maintenance and engineering at the Minneapolis base to mgr. of the base.

Braniff promoted **Richard A. Flume** from mgr. of West Coast engineering to chief engineer. **V. F. Fairchild**, who has been in charge of Latin American ground operations, named system mgr. of ground operations.

**L. Orville Cameron**, asst. v.p. of Eastern, appointed director of state and community relations. New asst. directors are **Edwin V. Smith**, of New York district sales, and **Norman D. MacDonald**, staff asst.

Capt. **James I. Miller**, asst. operations mgr. for Eastern in New York, named asst. to the president. This post will rotate every 12 to 18 months to give administrative experience to men from various departments.

**Edwin W. Breed** promoted by Northeast from gen. traffic and sales mgr.-northern region to gen. sales mgr. of the company.

**John M. McCloskey**, who handled group and convention sales in southern New England, heads a new interline and international sales dept.

**T. M. Miller**, v.p.-traffic and sales of Delta, elected a director of Air Cargo Inc.

**Joseph S. Sykes** promoted from Japan sales mgr. of Northwest to Orient region sales mgr., based in Tokyo. He succeeds **J. J. Fauteux**, who left NWA to join New Orient Express, New York wholesale tour operator.

**Ronald Clark** promoted by Flying Tigers from British sales representative to European sales mgr.

**William E. Ryan**, asst. San Francisco sales mgr. of United, named supt. of commercial and government sales, based at Chicago headquarters.

**Ernest Washburn**, Lake Central's district mgr., promoted to mgr. of the new air cargo dept.

**Mrs. Mavis Kimball** promoted from asst. supervisor to supervisor-hostess training of Continental.

## AMONG THE SUPPLIERS

Top management of Britain's Hawker Siddeley Aviation Ltd. now includes: **Sir Roy Dobson**, chairman; **Sir Aubrey Burke**, deputy chairman; **J. T. Lidbury**, chief executive; **J. A. R. Kay**, sales director; **S. D. Davies**, technical director.

**Raymond V. Bruland**, former mgr. of Collins Radio's central European region, named mgr. of the company's Cedar Rapids division aviation product line. **Glenn M. Bergmann**, former sales director of the eastern region, appointed director of marketing at Cedar Rapids. **Richard F. Haglund**, who has been director of service at Cedar Rapids, is gen. mgr. of a newly-created service division. **Robert C. Terbeck** advances from director of field operations for Alpha Corp., subsidiary, to director of field services in the new division. **John H. Boyle**, former director of central sales for Collins, is gen. mgr. of the new communication and data processing division.

**Gifford G. Zimmerman**, who has been mgr. of tires, airline and distributor sales of B. F. Goodrich Aviation Products, named division mgr., field sales. All aviation products district mgrs. will report to him.

**William P. Lear**, board chairman of Lear Inc., announced establishment of an annual award for the most significant achievement in the field of air traffic safety.

A ground support organization has been established by General Electric within its aviation and defense equipment sales operation to market electrical ground support systems. **Charles J. White**, Washington, D.C., is ground power sales coordinator, and **James W. Scanlan**, at the aviation electrical systems engineering sub-section, Waynesboro, Va., is ground power application engineering mgr.

**James A. Farris** promoted from asst. service mgr. to service mgr. of Motorola Aviation Electronics.

**Phillip Camerano**, test pilot with Vertol Div. of Boeing, has become the first helicopter test pilot designated by FAA to conduct tests on large transport-type helicopters.

**Wesley G. Kaldahl** resigned as director of scheduling for Capital to become director of special projects in American's schedules dept.



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# Terminal Speeds, DME on FAA's Agenda

Proposed rulemaking on terminal area limits  
first of agency reactions to Dec. 16 accident

It took only a month for official FAA reaction to the industry's first ATC mid-air collision to come to the surface in rulemaking. It will be many months before the rulemaking aftermath of the Dec. 16 New York crash is over.

Firing back at United Air Lines criticism of FAA's ATC system and its handling of the UAL jet involved, former Administrator E. R. Quesada disclosed agency plans to issue proposed rulemaking establishing a terminal-area speed limit for jet transports to prevent jet speeds from wiping out all vestiges of margin-for-error in the ready strained ATC system.

Quesada also listed FAA's latest plans for boosting DME—a government-industry prerulemaking conference scheduled for March 22 in Washington—as part of his agency's answer in prevention of a recurrence.

Quesada gave no details, but reliable FAA sources spoke in terms of a 220-knot speed (IAS) in an area of perhaps 50-miles radius, with a draft release to be issued in February. The proposal now

seems clearly to have been easier said than done. Although it remains a "priority" task, there is talk of hiking the speed minimum, of problems with industry, and of producing the draft release "as soon as possible." There also is the obvious problem of turning out rulemaking in so sensitive an airline operations area that was initiated by an administrator since departed and replaced.

Nor did it take industry long to react to Quesada's implication that carriers need prodding to improve air safety with accelerated installation of DME. ATA reminded aviation writers of the industry's airborne radar development credits, and came forward with schedules spanning four years for voluntary installation of DME and radar beacon transponders. Their timetables: DME—all jets by Jan. 1, 1963, turboprops by July 1, 1963, pressurized pistons by Jan. 1, 1964, and all other transports by Jan. 1, 1965. Transponders—12 months for turboprops, two years for pressurized pistons, three years for all others.

closer to uncontrolled airports to cover transports making instrument-procedure approaches. But the existing five-mile control zone radius is retained, with extensions where needed, and the proposed nine-mile radius carriers would like to have is out. Individual airspace cases will take a year or more to completely implement the new policy.

• Owners have until Jan. 1, 1966 to comply on all but newly marked or remarked aircraft with FAA's new requirement (60-5) for 12-inch-high numbers or letters on both sides of the fuselage between wing and tail, or on the vertical tail surface.

• Clarified language (60-16) was written into the CARs to permit a pilot to fly VFR-on-top over a control zone without special clearance when the ceiling is below 1,000 ft.

## VIOLATIONS

For an agency which had just expressed its "reluctance" to invoke emergency certificate action without further direction from Congress, FAA was singularly sure-footed last month with several pilot violators.

It threw the book at Capt. Boris S. Nadiak, Miami, in a revocation based on 10 counts fashioned from a score of charges and past violations dating back to 1951. Nadiak, a National Airlines pilot, was accused of a below-minimums landing, an illegal tailwind takeoff, a near-miss in executing a missed-approach pull-up, six violations showing "disregard of air traffic rules," and an assortment of miscellaneous charges that included permitting his wife and children to use the jump seat, and "misuse" of his airliner's public address system to sing the national anthem as the flight passed over Ft. McHenry where it was inspired.

Other emergency actions saw the commercial ticket of Capt. Dale E. Cunningham, Macon, Ga., revoked for—all while "under the influence"—taking off alone in a Riddle Airlines C-46, buzzing the field (Cochran Field, Ga.), then declaring an engine-out emergency and landing at Robins AFB; the ATR of Capt. Carle E. Loveless, Hollywood, Calif., revoked for a Nov. 25 President Airlines flight from Ft. Leonard Wood, Mo., which FAA said he misplanned, continued when he should have stopped for refueling, then ended with an emergency landing at its Oakland, Calif. destination after Loveless became lost for a time; and suspension of the Class I medical certificate of James O. Evans, Miami, Fla., for a series of personal-conduct incidents which caused Pan American World Airways to fire him last April, and led FAA to the belief he is medically "disqualified" because of

## FAA ROUNDUP

The final rush (*AIRLIFT*, Feb.) of Quesada-era rulemaking brought the industry just about all it had asked in revision of FAA's oxygen-mask rule, and just about what it had feared in a special runway-slush proposal.

A final rule effective March 3 (60-15) permits both pilots to remain off oxygen up to and including Flight Level 350 if the flight deck crew is equipped with masks which can be donned one-handed in five seconds without disturbing glasses or disrupting emergency procedure or intercommunication.

FAA dropped its threatened pressure chamber indoctrination requirement, accepting the carriers' arguments that proper audio and visual training is superior to experience with hypoxia (oxygen starvation). The rule capped a 12-month carrier-pilot effort to soften FAA's Feb., 1960 rule setting 300 as the maximum for both pilots to remain off oxygen.

But FAA rulewriters turned industry down cold with its draft release (61-1) proposing takeoff weight penalties for takeoffs in slush, wet snow or "standing water." Its plan accepts only the retardation yardstick—NASA test results—from industry's plan submitted last October in pre-rulemaking conference. Rejected is ATA's claim that one-engine-out takeoff in slush is too remote a possibility for rulemaking, and its recommendation that the first quarter-inch of slush be ignored in calculating retardation.

FAA also wants carriers to set a slush depth maximum for each transport type

it flies beyond which it won't go because of spray or ingestion damage.

In other rulemaking:

• ATA has first pre-rulemaking news of a startling FAA plan that could delegate much of the agency's cumbersome airworthiness-directive rulemaking power to manufacturers—authority to make some service bulletins mandatory. As envisioned by Bureau of Flight Standards, it would involve decentralization of AD writing to field levels, and closer coordination of engineering-manufacturing policy that must produce ADs and maintenance policy which must make them work. There's much more discussion to come.

• Both flight data and flight deck conversation recording will be given the full government-industry conference treatment March 7-8 at FAA's Atlantic City test center. Conversation recorders already are an FAA promise for future rulemaking; extension of data recording requirements to cover test, ferry, training and certification flights (*AIRLIFT*, Dec.) now is in final rulewriting stages (60-18), and FAA wants to sound the immediate future of recorders for maintenance or accident investigation on transports.

• A rewritten final rule (60-8) ended years of CAB-FAA effort to alter controlled/uncontrolled airspace boundaries about this way: General aviation gets a relatively uniform 1,200 ft. of headroom under control and transition areas at the expense of guaranteed vertical clearance over obstructions, per original proposal.

Airlines in turn get 700-ft. floors where controlled airspace must be carried down

behavioural or mental abnormalities.

Former Administrator E. R. Quesada had told a House subcommittee just before leaving office his agency had leaned over backwards to preserve certificate-holders' property rights by the most sparing use—pending "clarification" of Congressional intent—of FAA's authority to keep a pilot on the ground during appeal by declaring it an emergency public safety proceeding.

• One of FAA's huskier airline cases set Eastern Air Lines back \$12,500 as a compromise penalty for a series of maintenance violations. The agency originally pressed eight charges against Eastern, but withdrew four of them after EAL replied.

The remaining four included a Constellation that flew 44 trips and went through a Phase 4 check before inadequate cabin pressure prompting 26 log entries was tracked in a Phase I check to a 35-inch crack in the aft pressure bulkhead segment ring; an oil-burning DC-7B engine that wasn't opened until it showed metal; and two Electras with faulty windshield heat and fuel gauges.

• Other enforcement cases: A 30-day ATR suspension, retroactive to last Jan. 15, on Walter M. Wright Jr., pilot of a Southern Airways DC-3 which FAA says brushed the treetops in an abortive approach to Columbus, Miss.; FAA rejected an ALPA claim it was caused by an erroneous altimeter . . . Private pilot Carl Roos has been suspended for 60 days for flying his Navion into the Watertown, N. Y. control zone without ATC clearance in below-VFR weather, causing a near-miss with an EAL Martin 4-0-4 making an instrument approach . . . U.S. court action is being sought against Mooney Aircraft, Kerrville, Texas, for refusing to pay a \$1,000 compromise penalty for failing to meet type certification standards for welding and glueing in its Mark 20, 20A and 18C-55 model aircraft. . . . A \$250 counter-offer accepted from Capital Airlines Capt. F. P. Heid, Falls Church, Va., whom FAA first proposed to suspend for 30 days for taxiing down a runway at high speed to blow accumulated snow from his aircraft's wings when his take-off was delayed . . . EAL maintenance man S. J. McDonough, So. Boston, \$200 for incorrectly adjusting two hydraulic prop governors, forcing in-flight feathering . . . Capital maintenance man Alexander Kuster, Bethpage, N. Y., \$100 for failing to catch faulty replacement of a Viscount brake assembly that later caused hydraulic failure and a taxiing collision . . . Capital Mechanic Charles K. Palmer, Rochester, N. Y., \$100 for failure to install the bearing keeper and lock ring on a Viscount wheel-tire assembly . . . EAL mechanic James S. Newman, Miami, for insufficient inspection of an Electra fuel tank before sealing it after installation of an overflow valve.

• Another stiff fine of \$6,000 was assessed against Lockheed for a series of violations involving missing or cracked parts, and objects left inside wing tanks of Electras delivered to three airlines. The enforcement division said a \$17,000 maximum penalty would have been possible. But it said Lockheed has taken corrective measures—requiring specially-trained mechanics wearing pocket-less coveralls, taking inventories of all material "lost". Articles in the cited cases included a rivet squeeze gun and a venturi-type vacuum cleaner going into open wings and tanks, and special final inspections.



TRANS-CANADA AIRLINES PHOTO

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## NEWS IN BRIEF

### EQUIPMENT

**MATS goes jet**—The logistics arm of the U.S. Air Force is at long last going jet with an order to Boeing for 30 C-135s, first of which are to be delivered in June at a rate of two per month.

MATS also will get 23 additional C-130Es and will have 50 of the Lockheed turboprops by March 1963 instead of September '63 as planned earlier.

Next big step will be the award of the SS476L contract for the optimum civil-military cargo plane. It used to be called the SOR 182 aircraft but now warrants the full "Support System" treatment, although some areas in the Pentagon confusingly retain the old designation.

**New orders**—Three European airlines have ordered 14 more Caravelles bringing Sud Aviation's total to 116 firm and 29 on option. Alitalia ordered six raising its total to 14, SAS ordered four for Swissair and Iberia, Spanish airline, bought four and optioned four others.

Alitalia has taken up its option for two more DC-8s . . . Douglas built 10 extras, four of which have been sold and at least two are being negotiated.

United Arab Airlines has ordered two additional Comet 4Cs for delivery this summer increasing its fleet to five and de Havilland's total orders to 62.

U.S. Army and the government of Ghana boosted de Havilland of Canada's orders for Caribou transports by 32, 24 for the Army and eight for Ghana. In all, Caribou orders now stand at 64.

Pan American has signed up for five 707-321Bs at \$30 million for 1962 delivery bringing its jet fleet to 59. It also optioned five others. El Al Israel has ordered a third Boeing 707-420.

**New services**—SAS and Swissair plan to introduce the GE fan-powered Convair 990 on Europe-Far East routes on Sept. 20.

**Resales**—British government will sell its three mammoth Saunders Roe Princess flying boats. Grossing 314,000 lbs. the Princess was designed to fly 200 passengers transatlantic but never entered service. Bid forms will be available in April.

**New prospects**—KLM has decided to buy Convair 990s with an order expected this month.

### AIRPORTS

**Concessions**—Interstate Hosts, Inc., Los Angeles, has been awarded a 17-year contract by Hawaii Aeronautics Commission for restaurant concession at Honolulu International Airport. It will build a \$1.1 million facility. Interstate will pay airport 13% of alcoholic receipts, 8% on food.

**New aids**—FAA is programming 40 new visual glide slope installations during fiscal '62 (*AIRLIFT*, Aug. 1960, p. 26).

**Airport planner**—FAA has issued its revised planning guide for "Airport Terminal Buildings," an 86-page volume available at 55¢ from Supt. of Documents, Government Printing Office, Washington 25.

### SALES/SERVICE

**SAS goes electronic**—SAS has adopted a system of electronic reservations tying in 120 agents sets in six countries with an electronic computer in Copenhagen. Manufacturer is Standard Elektrik, Stuttgart, Germany. IBM will supply data processing equipment for reservations space control.

**Eastern Air Lines** is adding two Remington Rand Univac 490 computers to its reservations and flight information center in New York. Complete system will be in operation by the first quarter of 1962.

**Airborne movies**—TWA will introduce in-flight movies for first-class jet passengers in U.S. transcontinental and transatlantic operations on May 1. Special equipment for airborne projection was developed by David Flexer, founder and president of Inflight Motion Pictures, Inc., New York. Lockheed Aircraft Service is making the installations in all TWA 707s.

### FINANCE

**'Copter loan OK**—CAB has approved in principle government guarantee of a \$3.8 million loan from three banks for New York Airways \$4.35 million purchase of Boeing/Vertol 107 turbine helicopters. NYA gets its first article by the end of July, hopes to start service in mid-August.

**Jet loan clears**—U.S. Development Loan Fund has approved a \$3.1 million loan to Ethiopia for spare parts, maintenance and overhaul equipment for two Boeing 720Bs.

**Back to subsidy**—Aloha Airlines, one of the few if not the only local airline off federal subsidy, has asked to be reinstated. The reasons: depressed traffic and a Hawaiian sugar strike which brought \$170,000 in losses for November and December.

### MISCELLANY

**Flying hotel closed**—CAB has ordered M&R Investment Co., more popularly recognized as Las Vegas' Dunes Hotel, to stop operating as an indirect air carrier with its Dunes Magic Carpet Tours from U.S. West coast cities to the gambling resort.

**Ratebook oddities**—New York Airways gets about \$12.50 to load late mail at New York's 30 St. P.O., fly it to Newark, unload it and deliver it to another airline. The other airline gets about \$30 for loading the same mail, exclusive of its ton-mile revenue!

**Deserved seat**—When Frank Phillips, the U.S. State Dept.'s most travelled (seven million miles in 20 years) courier retired and settled down in Panama, the airlines presented him with a most appropriate gift—an airline seat.

**Air information**—United Air Lines in 1960 responded to 60,000 requests for jet age information through its aviation education program, according to Ray O. Mertes, program director.

**New service**—R. Dixon Speas Associates has teamed up with map-maker Rand McNally & Co. to offer airlines and exec operators the world over a new service. It would provide a centralized agency for takeoff performance data re-



**MARK YOUR CALENDAR** for April 17-21, the dates for the most significant session yet scheduled on supersonic transports. It is being sponsored by the International Air Transport Assn. Here Stan Krzyczkowski, IATA's technical director (left) talks over agenda with R. V. Carleton, Braniff v.p. and chairman of the technical committee. About 500 are expected to attend SST meeting at Montreal's Queen Elizabeth Hotel.

lated to specific airports, a chore now handled via flight manuals by individual operators.

ATA has been exploring such a service via a technical committee headed by Bill Harper, TWA. Jeppesen & Co., aeronautical chart specialist, also has entered a proposed service.

**New exercise**—Military's latest mobility training exercise, a Pacific operation called Long Pass, involved 132 MATS mission aircraft and 12,000 flying hours between Feb. 15 and 20.

**Promotions**—Northeast Airlines has promoted six officials to higher posts. Harry F. Zimmerman becomes asst. v.p.-controller; J. O. Urquhart, asst. v.p.-passenger service; Maurice M. DeGroff, asst. v.p.-traffic; John V. Auskelis, asst. v.p.-quality control; Frank C. Barker, asst. v.p.-communications and Arthur A. Brennan, asst. v.p.-personnel.

**Jet mishap**—U.S. air transport sustained its fourth big jet training mishap on Jan. 28 when an American Airlines 707 was lost in the Atlantic Ocean off eastern Long Island. Value of the three 707s and one 880 approaches \$20 million.

**New Award**—Lear, Inc. has instituted an annual award (a 36-in. silver trophy) for the most significant achievement in air traffic safety. First award will be made in '62.

**Ansett expands**—Ansett-ANA (Australia) has purchased Mandated Airlines Ltd., New Guinea and will operate it under present name with headquarters at Lae. Carrier operates nine DC-3s and six smaller types in services to Papua and New Guinea.

**Cooperation**—KLM signed an agreement with VIASA, new Venezuelan international airline involving European sales representation, lease of a DC-8 jet and crew for start of services on April 1 and training services.

**Airspace regained**—FAA in the U.S. during 1960 reinstated 15,213 sq. mi. of restricted or prohibited airspace to common use or 1/2 of 1% of the nation's total. Some 123,739 sq. mi. (4%) remains restricted.

## NEW BUSINESS

**General Electric's** Caravelle jet, now flying at Edwards AFB with CJ805 engines, is fitted with **Lear's** CIS-100 command instrument system. Three local airlines now use the Lear system in F-27s or Convair 540s. Lear has built more than 200.

**Tasker Instruments Corp.**, Pasadena, Calif. has delivered ATC terminal area sub-system equipment for use in the data processing central (DPC) semi-automatic ATC system due to undergo testing at FAA's Atlantic City facility.

New Comet 4Cs introduced by **Middle East Airlines** are fitted with five items of airborne electronics gear produced by **Standard Telephones and Cables, Ltd.**, including: STR 23 VHF communications transmitters and receivers; SR 34/35 VOR and ILS receivers; SR 36 marker beacon receivers; STR 18C HF communications gear and SA 10/11 intercom equipment.

**SAS and Swissair**, in a joint technical evaluation, have selected **Bendix Radio's** doppler self-contained navaid system for their DC-8 and Convair 990 fleets.

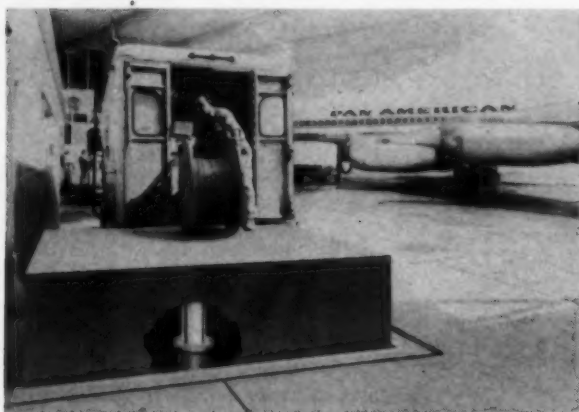
MARCH, 1961



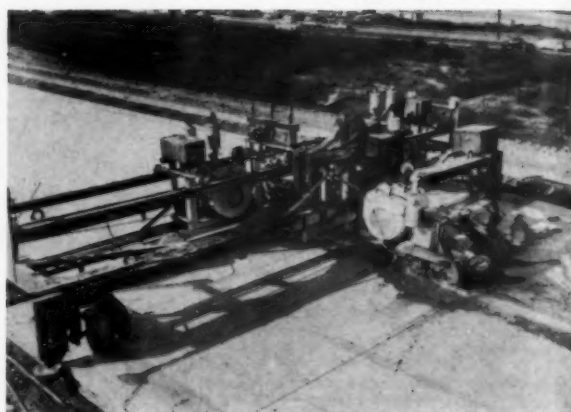
**BRITISH AIRCRAFT CORP.** has boosted its orders for VC-10 jets to 48 with a contract from the government of Ghana (Africa) for three. BOAC previously ordered 35 VC-10s and 10 Super VC-10s. British United Airways says it will buy four if it gets the routes it has asked for.



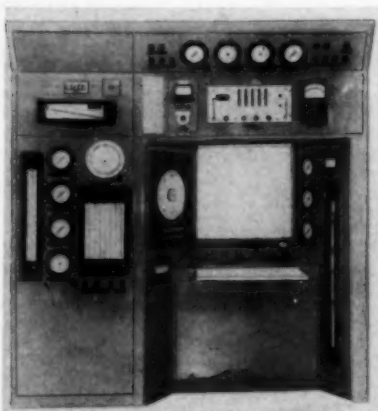
**OLD CONTROLLERS NEVER DIE:** The ten people who staffed the nation's first Air Route Traffic Control Center in Newark gathered recently in Washington to mark ATC's 25th anniversary, and to celebrate the retirement of one of their number, Mrs. Octavia Freeman. Of the group, only one has left FAA. Seated are Emerson R. Mehrling, Asst. Chief of Program Control, ATM; Mrs. Freeman, who retired after 32 years with FAA and its predecessors, and whose most recent job was in the Air Space Utilization Division; and John H. Huber, chief of plans and operations for the Office of Civil Defense Mobilization. Standing, left to right, are Hugh H. McFarlane, overseas staff of ATM; Lee E. Warren, chief of ATM's operations evaluation division; Homer F. Cole, R&D coordinator for ATM; Roland E. Sturtevant, chief of military liaison in ATM; John V. Tighe, special assistant to the FAA Administrator; Edward A. Westlake, ATM overseas staff; and David D. Thomas, director of the Bureau of Air Traffic Management.



*"Levelator" lift at Idlewild.*



*Joint cutter for concrete.*



*Turbo compressor test stand.*



*Canopy cover of Fiberglass.*



*Hobart ground power unit.*

## Elevator Platforms

Two Levelator lifts built by the Rotary Lift Co. are used by Pan American World Airways at Idlewild to simplify transfer of freight, supplies, and food service carts from terminal to airplane.

Freight emerges from building onto lift at ground height. The lift then is raised up to 4 ft. for transfer to loading vehicles.

The platform measures 6 ft. square. Cost of the installation was \$3200. Simplicity of operation contributes to ruggedness and insures long operating life.

## Joint Cutter

A machine developed by Concut Sales, Inc., utilizes six saws edged with diamonds to cut transverse and longitudinal joints in hardened concrete airstrips and ramps.

Strips from 18 ft. to 25 ft. wide can be sawed with the automatic machine, Model 2400 Jointmaster, fitted with a special longitudinal sawing attachment. One man can operate it.

Four diamond saws, each traveling a maximum of 6 1/4 ft., cut the joint across the pavement. As the machine moves forward into position for the next transverse joint, two diamond saws mounted behind the machine cut the longitudinal joint.

## Test Facility

A facility for testing aircraft cabin air turbo compressors and freon turbo compressors after overhaul, plus routine performance checking, has been developed by Aero-Test Equipment Co. The basic design for model 155 is adaptable for testing a variety of turbo compressors.

Special features of the facility include the ability to exert back pressure on the compressor to give a working load, and the use of a vacuum loop for overspeed check. Intake and exhaust lines are equipped with silencers.

## Ground Power

Hobart Model 3132 is a self-propelled aircraft energizer designed to service piston engined and turboprop aircraft. The generator is rated at 1500 amperes, 28.5 vdc, continuous duty, or 2000 amps at 28.5 vdc for a period of three minutes intermittent duty.

It is available with either gasoline or

diesel engine. The same engine propels the vehicle and powers the generator. This engine-generator combination is also available trailer mounted.

## Fiberglass Canopies

Canopies covered with fiberglass reinforced plastic panels are being used by Swissair on DC-8 passenger ramps. The material was recommended by the ramp manufacturer, Frech Brothers, Ltd., of Sissach, Switzerland, because of its translucency, light weight and resistance to weather.

The panels were manufactured by A. G. fur Zink-Industrie of Duisburg-Hamborn, Germany, German licensee of the process developed by Filon Plastics Corp. in the U.S.

## Bump Cap

Lightweight head protection for maintenance personnel is offered by the E. D. Bullard Co. of Sausalito, Calif. Known as the Bullard Bump Cap, this headgear offers head protection that is comfortable, easy to store and clean, and inexpensive.

The caps are made of impact-resistant plastic, come in white and yellow. They



*Lightweight head protector.*



will not crack, dent or shatter. A top lining of foam cushions blows, and a foam sweatband holds the cap on the head and absorbs perspiration.

## Two-Way Radio

A lightweight, two-way radio which can be used by ground maintenance crews has been developed by General Electric's Communications Products Dept. The unit uses tubes in a simplified circuit which achieves lower battery drain than previous models.

Fifteen-watt units now are in production at GE's Lynchburg, Va., plant under the name "General Electric Pacer." They are designed for operation in the 25-50 mc and 150-174 mc bands, with FM audio.

## X-Ray Films

Eastman Kodak Co. has made available its Industrial X-Ray Film, Type AA and Type M, Ready Pack, in roll form in 16mm, 35mm and 70mm widths. The 35mm rolls are used for non-destructive testing of pneumatic and hydrostatic tubes. The 70mm film is used for testing welded sections of thin steel and aluminum.

## Windshield Controls

A new development in control systems for use with Sierracote electrically heated windshields has been introduced by the Sierracin Corp. It is a separate mercury sensing element which requires only two relays and can be removed easily in event of failure.

If the mercury element should fail, replacement of just the element is necessary, not the entire windshield.

Sierracin Corp. also offers a transistorized inverter, developed in conjunction with Vap-Air Div. of Vapor Heating Corp., which weighs less than 9 lbs., requires 32 amps of 28 vdc to deliver 120 vac at 750 watts.

## Starting Cartridge

A low-cost, solid-propellant cartridge for starting jet aircraft engines has been test fired by Rocketdyne, division of North American Aviation, Inc. The cartridge measures approximately 8 in. long by 6 in. in diameter. It produces 430 gas horsepower for 17 seconds.

In operation, the cartridge is inserted in a special starter breech on the aircraft. When the pilot presses the starting button, the unit ignites and produces a jet stream of gas powerful enough to spin a small starting turbine.

The starting turbine, acting through a gear train, spins the main jet engine turbine. Additional units can be stored aboard the aircraft for starting engines at remote airfields.

## Air Hammer

A repeating air hammer—Model 150 RHP-090—has been produced by Heinrich-Nourse Co., New York. It is bench mounted and is operated by foot pedal or hand lever, can be used to remove wrinkles from airplane sheet metal.

The vibrating or repeating hammer has internal valving, with no outside valve or trigger. Actuation is by contact pressure of the tool on the work. The hammer will repeat as long as contact pressure is maintained.

Rate varies from 3000 to 6000 times per minute, adjusted by air pressure. Ac-

For further information on items mentioned in *Equipment World*, write: Readers' Service Dept., *Airlift Magazine*, 1001 Vermont Ave. N.W., Wash. 5, D.C.

tion can be regulated from gentle vibration to riveting capacity of 1/2 in. in mild steel.

## Ground-Air Radio

A two-way radio for use by airport ground vehicles, flying schools, fixed-base operators and others is being marketed by Gonset Div., Young Spring and Wire Corp. The Model G-150 offers high output in the 108-136 mc aircraft band.

It is available in 6, 12, or 28 vdc, or 115 vac. It can be operated as a fixed station, from ground vehicles or aircraft. It is capable of two-way communications with any aircraft having VHF equipment, other ground equipment or airport control towers.

Frequencies are crystal controlled; no external tuning is required. Adjustable squelch eliminates background noise during standby, and an automatic noise limiter reduces ignition interference.

## Airless Pump

A low-cost airless pump suitable for spray finishing airport rolling stock has been developed by the DeVilbiss Co., Toledo, Ohio. It has a five gallon capacity and weighs 17 lbs.

The pump has a 26-to-1 ratio and will handle most materials with the air pres-

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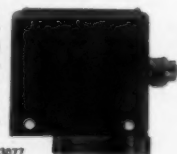
#### DATA

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sure supplied by a 1-hp compressor.

The company also has available a nylon, plastic covered high pressure fluid hose with spiral static wire for use with the airless pump. Other accessories include a regulator assembly with gauge and blow gun, a material strainer, and a swivel connection between hose and gun for increased spraying flexibility.



Hand-operated fluid dispenser.

#### Fluid Dispenser

A portable, hand-operated fluid dispenser manufactured by Sprague Engineering Corp. is designed to simplify the task of topping off airborne reservoirs and fluid systems with filtered fluid.

The dispenser weighs 10 lbs. and has a capacity of 1 1/2 gals. Fluid is dispensed from a stainless steel supply tank with air charge created by a hand-operated brass pump assembly.

The standard assembly is equipped with a 10-ft. hose, 10-micron filter and hand activated nozzle with dust cap. Use of the portable unit facilitates airplane turnaround when only small quantities of fluid are needed.

#### Boarding Ramp

A "weather-proof" covered ramp has been devised by a Dutch firm in Papendrecht, Holland. It consists of three sections that extend to a length of 120 ft. from departure gate to cabin door. The angle of incline is variable to permit adjustment in height for different aircraft.

Built-in safety devices protect the aircraft from damage while the bridge is being extended. A hydraulic servo-system matches bridge movements to the airplane as it shifts under increasing weight of loading passengers.

A floor height ranging up to 14 ft., and a floor weight capacity of 45 lbs. per sq. ft. is obtainable. Special controls pro-



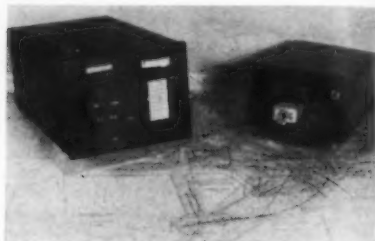
Dutch "weather-proof" ramp.

test the bridge from being jarred or moved by unexpected wind gusts with velocities up to 62 miles per hour.

#### HF Transceivers

A newly-developed series of high frequency aircraft transceivers has been announced by The PanTronics Corp., new organization formed in Fort Lauderdale, Fla.

Designated the PanCom series, the transceivers will be 10 channel, crystal controlled, with 50 watts transmitter output power. Weight will be under 20 lbs. Emphasis will be on long-range communications.



Crystal-controlled transceiver.

#### INFO FOR THE ASKING

To receive copies of the literature described below, address inquiries to: Reader's Service Dept., Airlift, 1001 Vt. Ave. N.W., Wash. 5, D.C. Your letters will be promptly forwarded to the manufacturer or supplier concerned.

**Jet structures**—Booklet from Boeing describes testing to destruction of 707 structures and lists stress figures for critical assemblies.

**Navigation catalog**—1961 catalog of navigation equipment, instruments, books and charts is available from Pan American Navigation Service.

**Aeronautical charts**—Information from Coast and Geodetic Survey updates data on availability of aeronautical charts prepared by U.S. agency.

**Electrical testing**—Catalog from Associated Research, Inc., describes instruments for testing airborne electronic and electrical materials, components and assemblies.

**Coaxial components**—Microlab catalog lists coaxial components for microwave applications.

**BDH indicator**—Catalog page has illustrations and technical details of 3-in-1 bearing-distance-heading indicator manufactured by John Oster Mfg. Co.

**Ground power**—Six-page brochure from Motor Generator Corp. covers complete line of Hobart ground power units for aircraft.

**Hangar heating**—New line of electric infrared heaters for direct radiant heating of airplane hangars is described in 8-page brochure from Fostoria Corp.

**Electronics catalog**—Wilcox Electric Co. has announced the availability of a new catalog of Wilcox electronic devices entitled Modern Aviation Electronics. Booklet includes brief descriptions of airborne and ground communication and navigation equipment.

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## Tips on the Fine Arts...

### Murals, Martinis and Meals

Last month on this page I made some comments about Rome's Ciampino Airport. Quite unexpectedly in January Rome got around to opening its big new Fiumicino Airport west of the city and maybe Ciampino is now past history for airline operations.

From what I hear, Fiumicino opened amid confusion with many items unfinished, such as no signs on the ladies' and mens' rooms, something that might be frustrating anywhere except Italy. In any event, before you read this page I will have been to the opening of the big new terminal at Orly Airport in Paris and to take a quick look at Fiumicino. In due course I'll have a report on both.

It is quite fantastic what the jet airplane has done for travel time for a huge continent like Africa. The last time I had flown to the Union of South Africa was 1946 when it was a six-day jaunt from Cairo by Lodestars, six-passenger Avro Ansons, and finally a DC-4 from Johannesburg to Capetown. The return trip from Durban to Cairo was four full days in a flying boat on BOAC, with three overnight stops. There was virtually no night flying anywhere. And that was only 15 years ago.

My recent trip on an Alitalia DC-8 was only about fourteen hours from Rome to Johannesburg with two hour-long stops en route. Other jet schedules are similarly short. In a way it's a pity, because there is a lot of fascination flying low and slow over the desert, then over the wild life country with the many lakes and rivers, and finally to the big cities of South Africa. By jet at 30,000 feet you see nothing.

#### A for effort, not for art

I should mention that Alitalia features original oil paintings in its DC-8 first-class compartments and lounges as a novel decorating motif. The collection for the fleet must have cost a fair sum of money. But since the crews occupy the handsome lounges all the time, the passenger gets only a fleeting glimpse of the paintings entering and departing, and there are just two originals hanging on the front bulkhead of the first class cabin.

I'm a modernist of sorts, and Alitalia's originals are modern, but two of these paintings by chance were on both the going and returning trips and I found one of them increasingly irritating because it was an abstraction that conjured up all sorts of brash meanings at a distance.

Give Alitalia an "A" for effort but I think original modern art is a wonderful sales gimmick which is largely wasted in the execution. Decorating airplane interiors is a skillful art and quite difficult. Few airlines have used experts. Most of them strive for something startling or

novel. I'm in favor of a cool, calm, subdued effect.

Like every international airline, Alitalia goes in for plush dinner service. In one aspect, at least, the Italian line wins a gold medal. I've never seen such spotless, immaculate cream colored jackets which the stewards wear when serving. Really handsome.

When it comes to the drink department, however, I recommend that Alitalia send its stewards en masse to Washington for training under Professor Glenn Collins, Doctor of Mixology and Saloon Psychology. Dr. Collins holds forth with almost sadistic determination in the men's bar of the National Aviation Club and when it comes to a Martini or a Bloody Mary, there just ain't anyone around to match his skills.

#### A good Alitalian martini?

It would be cheaper for Alitalia to have him go to Rome to conduct his saloon courses, but we can't afford to have him leave Washington even for a week. What with the economic recession and all, considering Collins' proclivities in the pouring department, the booze business would go down the drain in his absence.

What I'm getting at is that the Italians aren't as crazy about alcohol as Americans, Russians, Norwegians and Finns (the Big Four of Depressant Escapism in a Cruel World), and they have an aperitif called Martini which is sold in bottles and is a mild sort of medicine which a Beef-eater dry Martini fan wouldn't use for cough medicine for his kids, although there are respectable people, it's rumored, who think it's a pretty fair pre-dinner smooze.

I wouldn't know about that, but I can tell you it took an awful lot of effort to get an Alitalia steward to make a dry Martini. In fact, he just couldn't stop pouring vermouth, so I had to make one myself, which come to think of it, wouldn't be a bad feature for any long-haul airline to keep the passengers amused—let 'em make their own drinks. (Wonder how long that would last!)

Anyway, Alitalia has a very elaborate service and this brings up a subject which pertains to all airlines using serving carts in the aisles and trying to perform a restaurant service in an airplane.

I think this business of carts is 'way overdone. Everyone I've seen takes up at least three-quarters of the limited aisle space and somebody is always trying to pass by and often something drops off or spills off, and I've never yet seen a steward that has everything he needs on a cart so there's nothing but confusion in a well-intentioned effort to try to do a plush Ritz job in limited space.

I know the European airlines tend to scoff at the American carriers with their idea of serving a complete meal on a single tray, because it looks so regimented

and unimaginative, but on the other hand, in all the traveling I've done I've never yet seen a really good job performed by serving a multi-course dinner from aisle carts.

Half the people get lukewarm or cold soup by the time the steward makes the rounds. Half the people get cold roast beef instead of hot by the time the steward does an individual slicing job for all the customers.

There must be a sensible compromise between the routine service which we have in the U.S. (about which I have no real criticism) and the hectic, confused, bedlam which often results on plush international services (including American carriers) where several stewards and several stewardesses rush up and down the aisles with individual handing out of silver, then of bread, then of butter, then of courses, all trying to duplicate a first class restaurant under impossible circumstances.

The odd thing is that with all of the cabin help being used on trivial things, the customer spends an awful lot of time waiting between courses. And something is always running out. Nothing ever seems properly timed. It's poor organization.

The airlines, it seems to me, must adopt their own system of serving instead of trying to copy restaurants. In this regard, I think the domestic U.S. airlines have worked out the simplest of all systems, the most satisfactory in the over-all.

Using this hot tray system to start with, the international carriers could simply add some flourishing touches instead of wasting the time of cabin help in making the rounds with silverware, then bread, then butter, and nobody ever getting his food and wine at the proper time. I see nothing wrong in having the silverware in cellophane or in a napkin already on each tray along with other essentials such as bread, butter, glasses and cups.

#### To Athens and Nairobi

Now, with that off my chest, let's continue to Africa.

One of the delights of international travel is the ability to meet people and old friends at transient stops. When I arrived in Athens for the hour stop, there was B. Tsalpatourous and his very attractive wife, all prepared with hospitality in a corner of the transient lounge. They are the publisher and editor respectively of the Key Travel Guide, the airline schedule and travel guide of Greece and the Middle East, which has a relatively new edition for Italy. Had a good chat—both business and social.

Then off across the Mediterranean and the Sahara on the night hop to Nairobi, Kenya Colony, arriving at 2:30 a.m. following a heavy rain that almost diverted our flight to Entebbe. Quite a change from the small field and small terminal in 1946 when I got an exceedingly cold reception from Kenya immigration concerning the purpose of my trip, a reception which only thawed when I produced an onward ticket. Visitors weren't very welcome then.

Today Nairobi has an excellent airport and a very handsome and spacious terminal. Even at the early morning hour the several shops were open. What puzzled me, however, was the parking of our DC-8 about two city blocks away from the terminal—and not a single airplane in between. Wonder why it was necessary to make the passengers walk over the wet ramp for such a long distance?

(To be continued)

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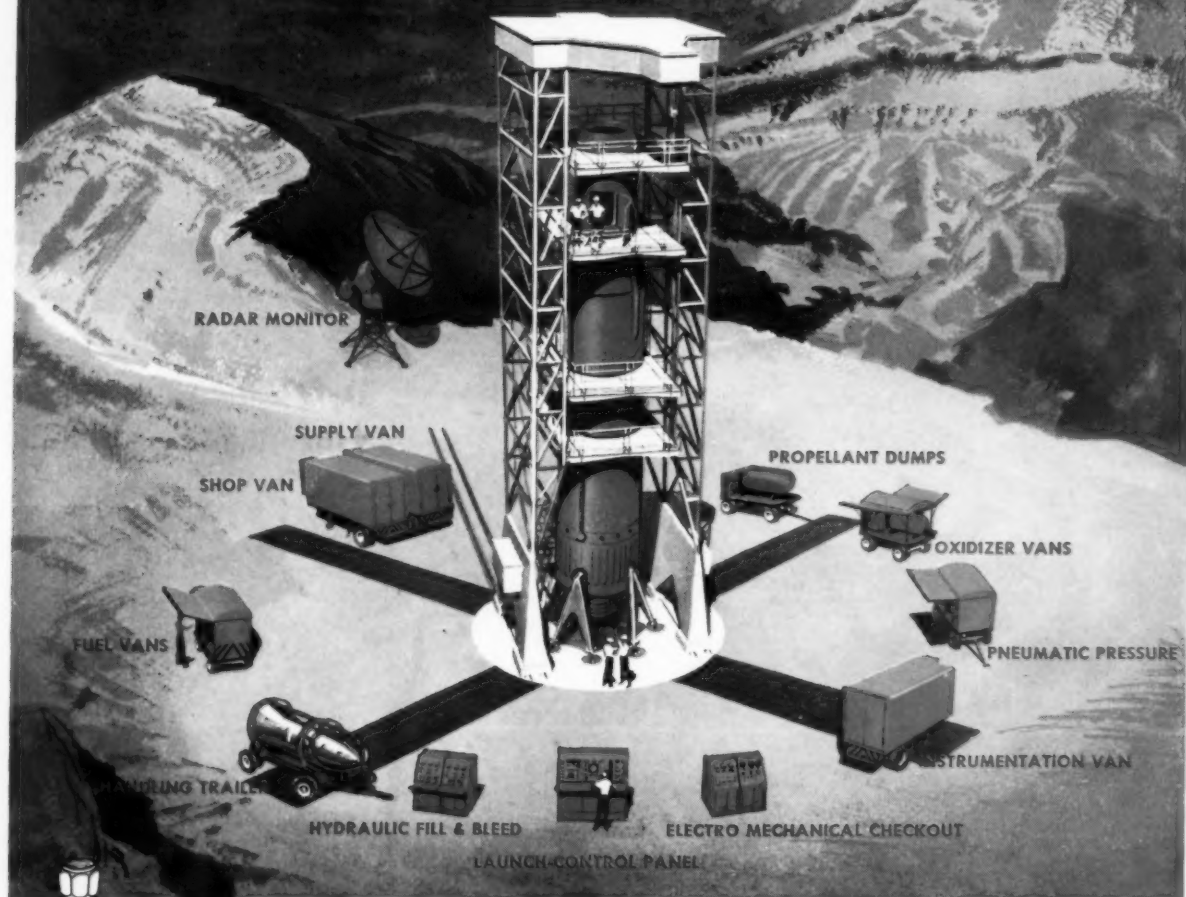
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Fluoroflex®-T hose, Resistoflex's proprietary Teflon® product, is absolutely unaffected by any fuel, fluid or gas except high-temperature fluorine and the molten

alkali metals: it is non-aging, and has virtually unlimited shelf and service life. Moreover, the Resistoflex swaged fitting, pioneered and developed by Resistoflex, has been used in millions of Resistoflex hose assemblies, with never a blowoff on record!

So, for *your* operation, whether it's on the ground, or in the air, or still on the drawing-board, why not insist on the *complete* reliability that Resistoflex has built into its swaged-fitting Fluoroflex hose assemblies? Write for information today. Plants in ROSELAND, N. J., Anaheim, Calif., Dallas, Texas. Sales offices in principal cities.

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